

Environmental Assessment
For Clear AFS Grid Tie-in and Heat Plant
Clear Air Force Station, Alaska

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FINDING OF NO SIGNIFICANT IMPACT

Clear AFS Grid Tie-in and Heat Plant

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 U.S. Code 4321 et seq, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP), the U.S. Air Force (Air Force) conducted an assessment of the potential environmental consequences of Clear AFS Grid Tie-in and Heat Plant at Clear AFS, AK. This Environmental Assessment (EA), (Environmental Assessment For Clear AFS Grid Tie-in and Heat Plant, Clear Air Force Station, Alaska), attached and incorporated by reference in this finding, considers the potential impacts of the Proposed Action on the natural and human environments.

Proposed Action

Proposed Action: Under this alternative, the Air Force proposes to construct a grid tie-in to connect the existing electrical distribution system at Clear AFS to the 138-kV line operated by Golden Valley Electric Association (GVEA) that runs parallel to the Parks highway (approximately 2.8 miles) with the associated switchgear, transformers and other electrical and mechanical equipment necessary. In addition, Clear AFS proposes to construct/install new oil fired boilers to provide heat for the composite area buildings and a backup generator for the composite area.

Summary of Findings

Air Quality: Some minor increases in air pollutants are expected during construction. However, during operation, pollutant emissions are expected to decrease resulting in an overall benefit in this area.

Biological Resources: Construction impacts resulting from implementation of the Preferred Alternative would result in insignificant impacts on vegetation due to the required clearing of a an approximately 2.8 mile by 150 foot wide ROW (totaling 51 acres) for the electrical transmission line to connect the Power Plant to the electrical grid. BMP's would be utilized to avoid impacts to wetlands. Impacts associated with the operation of the power lines are insignificant due to BMP measures to be implemented.

Cultural Resources: There is no adverse impact expected as there are no known or surveyed sites within the project area. Any cultural resources identified during construction of the transmission line ROW would be avoided by selective pole placement to avoid the area and by limiting vehicular traffic and construction and maintenance activities in the area. If ground-disturbing activities during project construction uncover cultural materials, all work would cease in that area and interested Tribes and the SHPO would be notified immediately.

Socioeconomics: Insignificant short-term beneficial effects are expected during construction phase due to workforce needs associated with construction. Due to the lack of children at Clear AFS, no health and safety impacts to children are expected. Likewise, because the project would occur entirely within the boundaries of Clear AFS, no disproportionately high and adverse human health or environmental effects on minority or low-income populations would be expected. There would be insignificant long-term adverse impacts from the implementation of the preferred alternative. The current employees would no longer be employed by the Power Plant. The unemployment rate in the Denali Borough area is relatively low (see Table 10) and therefore, these individuals may be able to find employment in the area. As DoD civilian employees, the workers would have preferential hiring status for other DoD employment at Clear AFS or other Federal Facilities

The analyses of the affected environment and environmental consequences of implementing the Proposed Action presented in the EA concluded that no significant adverse effects will result. No significant cumulative adverse impacts will result from activities associated with the project, when considered in conjunction with recent, past, and future projects within the project area.

As there are no significant adverse environmental impacts that will result from implementation of the proposed action, no mitigation measures are required. The proposed management practices identified in the EA are standard construction management practices that will be implemented by the contractor to comply with permit requirements.

FINDING OF NO SIGNIFICANT IMPACT

Based upon my review of the facts and analyses contained in the attached EA, conducted in accordance with the provisions of NEPA, the CEQ Regulations, and 32 CFR Part 989, I conclude that the Proposed Action will not have a significant environmental impact, either by itself or cumulatively with other ongoing projects at Clear AFS, will not involve an element of high risk or uncertainty on the human environment, and its effects on the quality of the human environment are not highly controversial. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact (FONSI) completes the environmental impact analysis process.

APPROVED BY



JENNIFER R. JEFFRIES, Lt Col, USAF
Commander, 13th Space Warning Squadron



Date

ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

This Environmental Assessment evaluates the potential environmental, socioeconomic, and cultural effects of the U.S. Air Force's proposed project to tie into the Golden Valley Electric Association (GVEA) electrical grid, install new boilers to provide heat for the composite area, and install a backup generator for the composite area at Clear Air Force Station, Alaska.

As required by the National Environmental Policy Act of 1969 (42 USC 4321 *et seq.*), the Council on Environmental Quality Regulations Implementing the Procedural Provisions of NEPA (40 CFR Part 1500-1508), and 32 CFR Part 989 (*Environmental Impact Analysis Process*, Final Rule), the potential effects of the proposed actions are analyzed. This Environmental Assessment will facilitate the decision-making process regarding the action, and is organized as follows:

Section 1 – Purpose, Need, and Scope: describes the purpose of and need for the project as well as the general extent of proposed project activities.

Section 2 – Description of the Proposed Action and Alternatives: provides background information for the project and describes the Proposed Action in detail. Also included in this section is a description of the alternatives that were considered for achieving the stated purpose, including any alternatives that were eliminated from detailed study.

Section 3 – Affected Environment: provides a description of existing resources that have the potential to be affected by the action alternatives as well as the No Action Alternative.

Section 4 – Environmental Consequences: describes the environmental effects of implementing the Preferred Action Alternative, the No Action Alternative, and the other alternatives carried forward for analysis. The analysis is organized by resource and considers both direct and indirect effects. The effects of the No Action Alternative provide a baseline for evaluation and comparison. Mitigations and actions included in the alternatives that may be taken to reduce impacts to resources are also discussed.

Section 5 – List of Preparers: provides information regarding the interdisciplinary staff involved in preparing the Environmental Assessment.

Section 6 – References: provides citations for documents and other materials used to prepare the Environmental Assessment.

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ACRONYMS

°F	Degrees Fahrenheit	EIAP	Environmental Impact Analysis Process
AAC	Alaska Administrative Code	EIS	Environmental Impact Statement
AAAQS	Alaska ambient air quality standards	EISA	Energy Independence and Security Act
ACM	asbestos-containing material	EO	Executive Order
ADEC	Alaska Department of Environmental Conservation	ESA	Endangered Species Act
ADNR	Alaska Department of Natural Resources	EUL	Enhanced Use Lease
AFB	Air Force Base	FONSI	Finding of No Significant Impact
AFI	Air Force Instruction	FPPA	Farmland Protection Policy Act
AFS	Air Force Station	FY	Fiscal Year
AFSPC	Air Force Space Command	GHG	Greenhouse Gas
AKNHP	Alaska Natural Heritage Program	gpm	gallons per minute
AMSL	above mean sea level	gpd	gallons per day
BMEWS	Ballistic Missile Early Warning System	GVEA	Golden Valley Electrical Association
BMP	best management practice	HAP	hazardous air pollutant
CAA	Clean Air Act	H ₂ S	Hydrogen Sulfide
CAAA	Clean Air Act Amendments	ICRMP	Integrated Cultural Resource Management Plan
CEQ	Council on Environmental Quality	IICEP	Intergovernmental and Interagency Coordination for Environmental Planning
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	IRP	Installation Restoration Program
CFR	Code of Federal Regulations	kV	kilovolt
CH ₄	Methane	kW	kilowatt
CO	Carbon Monoxide	LBP	lead-based paint
CWA	Clean Water Act	MGD	million gallons per day
DoD	Department of Defense	MOA	Memorandum of Agreement
DRMS	Defense Reutilization and Marketing Service	mph	miles per hour
EA	Environmental Assessment	MW	megawatt
EBS	Environmental Baseline Study	NAAQS	National Ambient Air Quality Standards
		NEI	National Emissions Inventory

NEPA	National Environmental Policy Act	PTE	Potential to Emit
NHPA	National Historic Preservation Act	RCRA	Resource Conservation and Recovery Act
NO ₂	Nitrogen Dioxide	ROW	right-of-way
NO _x	Nitrogen Oxides	SHPO	State Historic Preservation Office
NPDES	National Pollutant Discharge Elimination System	SO ₂	Sulfur Dioxide
NRCS	Natural Resources Conservation Service	SSPARS	Solid-State Phased-Array Radar System
NRHP	National Register of Historic Places	SWPPP	Stormwater Pollution Prevention Plan
NWI	National Wetlands Inventory	SWS	Space Warning Squadron
O ₃	Ozone	tpy	tons per year
O&M	Operations and Management	µg/m ³	micrograms per cubic meter
OSHA	Occupational Safety and Health Act	USACE	US Army Corps of Engineers
Pb	Lead	USEPA	US Environmental Protection Agency
PM _{2.5}	Particulate Matter ≤ 2.5 microns	USFWS	US Fish and Wildlife Service
PM ₁₀	Particulate Matter ≤ 10 microns	USDA	US Department of Agriculture
ppm	parts per million	VOC	Volatile Organic Compound
PSD	Prevention of Significant Deterioration		

Environmental Assessment for Grid Tie- in and Heat Plant

1. PURPOSE, NEED, AND SCOPE

1.1 Introduction

This Environmental Assessment (EA) is an evaluation of the proposal to tie into the Golden Valley Electric Association (GVEA) electrical grid, construct/install new oil fired boilers to provide heat for the composite area, and install a 1 Megawatt (MW) backup generator for the composite area at Clear Air Force Station (AFS), Alaska. Following completion of the project, the current Central Heat and Power Plant (CHPP) would be decommissioned and eventually demolished. The project would increase energy efficiency, provide a redundant source of electricity and heat and would result in cost savings to the government.

Clear AFS is located in east central Alaska approximately 80 miles southwest of Fairbanks in the Tanana Valley (see **Figure 1**). It encompasses 11,438 acres, most of which is undeveloped. The developed portion of Clear AFS consists of approximately 350 acres divided into four main areas:

- The Composite Area, where most administrative, recreational, and living quarters are located;
- The Camp Area, where civil engineering, maintenance shops, and security police offices are located;
- The Solid-State Phased-Array Radar System (SSPARS) Site, which is used to detect missile launches as well as to track moving objects through space; and
- The Power Plant and old Technical Site facilities (located immediately west of the Power Plant and scheduled for demolition).

Clear AFS is bordered to the east by the George Parks Alaska Highway (Alaska State Highway 3, or Parks Highway as referred to in this document), to the north by the community of Anderson, to the south by mostly undeveloped private land, and to the west by the Nenana River. Clear AFS can be accessed from the Parks Highway, which is the highway connecting Anchorage and Fairbanks.

Clear AFS supports the 13th Space Warning Squadron (SWS) and the 213th SWS Alaska Air National Guard. The 13 SWS is one of several geographically separated units of the 21st Space Wing, Peterson Air Force Base (AFB), Colorado. The two Squadrons work together to generate early missile launch warning data and provide coverage of the North American continent in the event of ground-based or sea-launched ballistic missile attack. They also provide space surveillance data for more than 9,500 manmade objects in orbit around the world. The staff is composed of approximately 300 active duty, Air National Guard, Department of Defense (DoD) civilians, and contract employees.

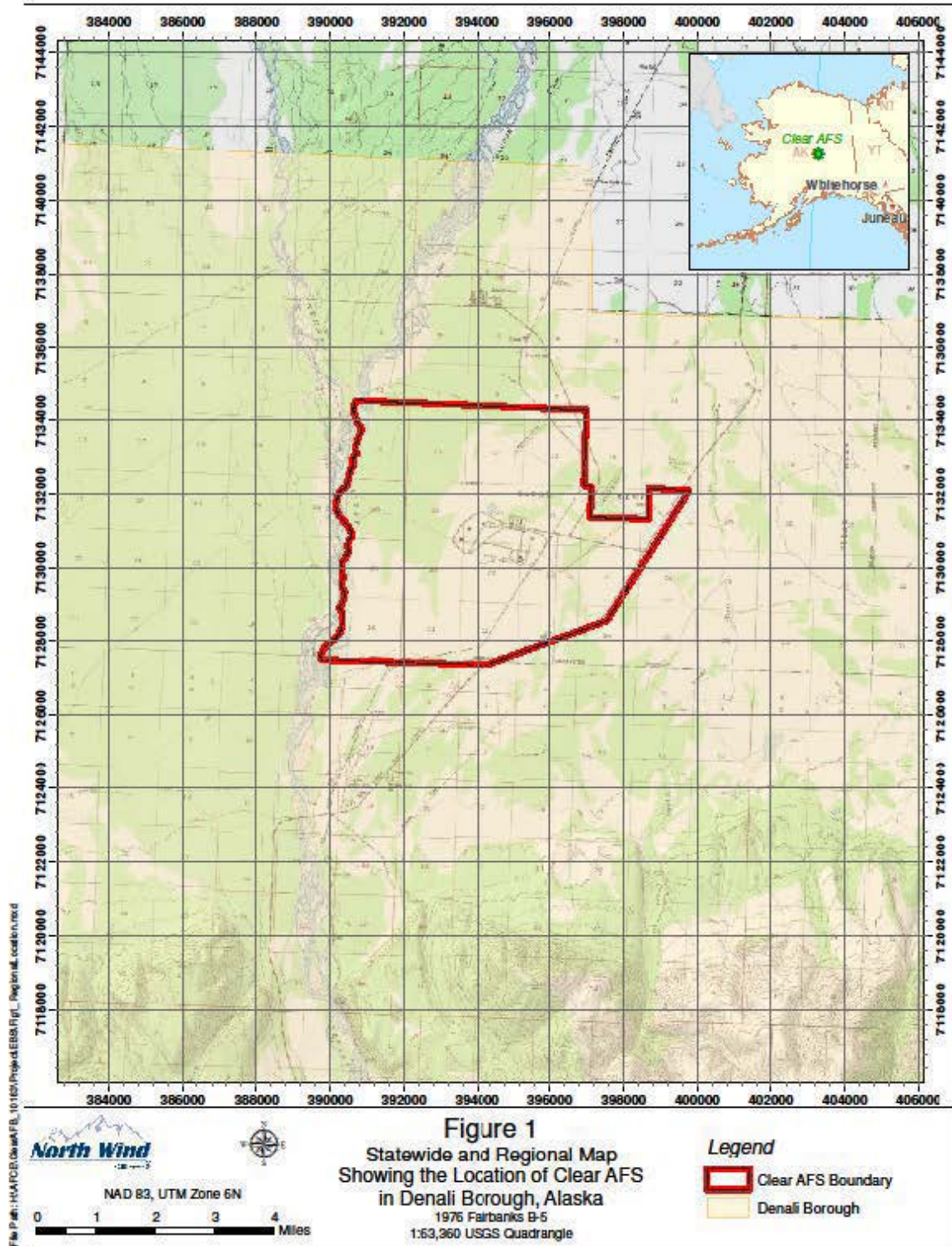


Figure 1. Statewide and Regional Map Showing the Location of Clear Air Force Station in Denali Borough, Alaska.

1.2 Purpose and Need

The purpose of the Proposed Action is to increase efficiency and cost-effectiveness related to heat and energy production and usage at Clear AFS.

The Clear AFS Power Plant (**Figure 2**) is owned by the U.S. Air Force (Air Force) and is operated by 30 to 35 full-time DoD civilian employees. It became operational in 1961, with the primary purpose of generating electricity to run the radar and computer systems for the Ballistic Missile Early Warning System (BMEWS). It contains three 100,000 pounds (of steam)-per-hour boilers, and three 7.5 Megawatt (MW) steam turbine generators capable of producing 22.5 MW of power. The plant currently burns approximately 57,000 tons of coal per year, and is operated at approximately 25-35 percent of its rated capacity. It has been operating at reduced capacity since late 2000, when the mechanical BMEWS radar was deactivated and replaced with the Solid State Phased Array Radar System (SSPARS), which requires approximately 90 percent less energy than the BMEWS.

The Power Plant produces steam for generating electricity for facility use. Heating steam is generated as a byproduct of steam electric generation. The majority of the steam produced is used to generate electric power. Excess power is shed to a load bank of resistance heaters that dump heat to the ambient environment. The amount of power delivered to the load bank varies to meet the minimum load requirements of the generators. The plant consistently generates more power than is needed by the installation. This results in Clear AFS accruing a much higher cost of energy than is warranted by its actual power requirements. Additionally, the Power Plant requires significant upgrades, the cost of which is not practical given the current operations scenario.



Figure 2. Clear AFS Power Plant, Facing North.

The installation's electric power requirements range from 3 MW from May through August and up to 8 MW from September through April. While Clear AFS's electric power requirements are relatively stable, the amount of power delivered to the load bank varies with the amount of steam delivered to the installation, which is a function of the ambient temperature.

Currently, two of the three boilers and turbine generator units are operated simultaneously to achieve redundancy and ensure a power supply in the event of a failure, and to better control/stabilize the system frequency at 60 hertz. The current conditions are in conflict with long-term Air Force goals mandating energy efficiency and use reduction.

The proposed action is needed to address the cost, energy, and practical inefficiencies associated with operating the Power Plant at a level greatly below its rated capacity, and to meet long-term Air Force goals mandating energy efficiency and use reduction.

1.3 Scope of the Analysis

1.3.1 Environmental Impact Analysis Process

The Air Force implementing regulations for the National Environmental Policy Act (NEPA) are found at 32 Code of Federal Regulations (CFR) Part 989, Environmental Impact Analysis Process (EIAP). The EIAP requires the Air Force to address environmental impacts through consideration and documentation of the environmental effects of a proposed action, as well as the No Action Alternatives and reasonable alternatives to the proposed action. Every EA must lead to either a Finding of No Significant Impact (FONSI), a decision to prepare an Environmental Impact Statement (EIS), or selection of the No Action Alternative.

1.3.2 Statutory and Regulatory Compliance

As stated above, this EA has been prepared to comply with NEPA. In addition, it addresses compliance with other applicable environmental laws and regulations including, but not limited to: the Historic Site Act of 1935; Clean Air Act of 1970 (CAA); Endangered Species Act of 1973 (ESA); Clean Water Act of 1977 (CWA); and the National Historic Preservation Act of 1979 (NHPA). The Air Force (or construction contractor for the project) would acquire any permits and licenses required before project implementation. No permits beyond those already in place at Clear AFS would be required for implementation of the No Action Alternative.

1.4 Public and Agency Involvement

The Air Force invites public participation in their Federal decision-making through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better planning. Agencies, organizations, and members of the public having a potential interest in the proposed actions, including minority, low-income, and disadvantaged persons and Native American Tribes, are invited to participate in the decision-making process.

1.4.1 Agency Coordination

Intergovernmental and Interagency Coordination for Environmental Planning (IICEP) is a federally mandated process for informing and coordinating with Tribal and other governmental agencies regarding a Federal Proposed Action. CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Air Force Instruction (AFI) 32-7060, IICEP, is the Air Force implementing guidance for agency coordination. Through the IICEP (i.e., scoping) process, the Air Force notifies relevant Federal, State, and local agencies and allows them sufficient time to make known

their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts conducted as part of this EA. This coordination fulfills requirements under Executive Order (EO) 12372 (superseded by EO 12416, and subsequently supplemented by EO 13132), which requires Federal agencies to cooperate with and consider State and local views in implementing a Federal proposal. It also constitutes the IICEP process for this EA. Agencies with whom the Air Force has consulted as part of this EA include:

- Nenana Native Association,
- U.S. Fish and Wildlife Service (USFWS), Region 7,
- U.S. Army Corps of Engineers (USACE), Alaska Division,
- U.S. Environmental Protection Agency (USEPA), Region 10,
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS),
- State Historic Preservation Office (SHPO),
- Alaska Department of Natural Resources (ADNR) – Division of Mining, Land, and Water,
- Alaska Soil and Water Conservation Board,
- Alaska Department of Environmental Conservation (ADEC),
- Alaska Association of Conservation Districts, and
- Alaska Department of Fish and Game.
- National Park Service, Air Resources Division

Copies of received agency correspondence are provided in **Appendix A**. Copies of received public correspondence are provided in **Appendix B**, as well as a comment matrix to address responses. Responses have been received from the following agencies and public organizations either identifying potential environmental concerns or issues, or stating that they did not identify any such issues associated with the Air Force's proposal:

- U.S. Fish and Wildlife Service (USFWS), Region 7.
- AFGE 1836

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Clear AFS proposes to construct a grid tie-in to connect the existing electrical distribution system at Clear AFS to the 138-kilovolt (kV) line operated by Golden Valley Electric Association (GVEA) that runs parallel to the Parks highway (approximately 1.4 miles) with the associated switchgear, transformers and other electrical and mechanical equipment necessary. In addition, Clear AFS proposes to construct additional heating systems to provide heat for the composite area buildings and a backup generator to provide power to the composite area in the event of a power outage. Once construction is complete, Clear AFS will cease operation of the CHPP and although not part of this project, eventually demolish the CHPP.

2.1 Alternatives Development

NEPA, the CEQ regulations, and 32 CFR 989, EIAP, require that a range of reasonable alternatives to the proposed actions be rigorously explored and objectively evaluated. For purposes of this analysis, an alternative was considered “reasonable” only if it would enable Clear AFS to accomplish the primary purpose of increasing energy efficiency, reducing government costs, while maintaining required reliability to support the mission. “Unreasonable” alternatives would not enable Clear AFS to meet the purpose of and need for the proposed actions.

2.2 Evaluated Alternatives

The alternatives evaluated in this EA were developed by Air Force leadership, and were assessed in a Feasibility Study conducted by the Air Force Real Property Agency. The preferred alternative and three other alternatives including the No Action Alternative were evaluated and are described below.

2.2.1 Preferred Alternative: Construct a Grid tie-in and Install New Oil Fired Boilers

Under this alternative, the Air Force proposes to construct a grid tie-in to connect the existing electrical distribution system at Clear AFS to the 138-kV line operated by Golden Valley Electric Association (GVEA) that runs parallel to the Parks highway (approximately 2.8 miles) with the associated switchgear, transformers and other electrical and mechanical equipment necessary. In addition, Clear AFS proposes to construct/install new oil fired boilers to provide heat for the composite area buildings and a backup generator for the composite area. Once construction is complete, Clear AFS will cease operation of the CHPP. This alternative meets the primary objectives of increasing energy efficiency, reducing government costs, while maintaining required reliability to support the mission.

This alternative includes the following elements:

- Constructing a step-up transmission substation on approximately 40,000 square feet between the Power Plant and the existing transmission line located approximately 1.4 miles east of the Power Plant. The location would be determined during later design phases, but would avoid any environmentally sensitive areas such as wetlands, floodplains, and Installation Restoration Program (IRP) sites,
- Clearing an approximately 150-foot wide by 1.4-mile long right of way (ROW) and constructing an electrical transmission line from the new substation to the existing 138-kV transmission line located immediately west of the Parks Highway. Although the transmission line has not yet been designed, similar lines in the vicinity have spans between poles of 300 to 750 feet. This spacing would eliminate pole placement in wetlands, floodplains or areas with undesirable soils. The

poles would likely be wood H-Frame structures, approximately 70 feet tall, with about 10 feet of pole embedded,

- Constructing multiple diesel fired hot water boilers in the existing composite area building mechanical rooms to provide hot water directly to the building heat system. As part of this, the existing steam heat exchangers would be demolished to make room for the new boilers and new above ground fuel storage tanks would be installed to supply fuel as required.
- Constructing a backup generator within a new enclosure to provide backup power to the Composite area.

A conceptual site plan showing the proposed location of the substation and transmission line is shown in **Figure 4**.

2.2.2 Alternative 2: Construct a Grid tie-in and Centralized Heat Plant

Under this alternative, the Air Force proposes to construct a grid tie-in to connect the existing electrical distribution system at Clear AFS to the 138-kV line operated by Golden Valley Electric Association (GVEA) that runs parallel to the Parks highway (approximately 2.8 miles) with the associated switchgear, transformers and other electrical and mechanical equipment necessary. In addition, Clear AFS proposes to construct a centralized heating system to provide heat for the composite area buildings and a backup generator for the composite area. Once construction is complete, Clear AFS will cease operation of the CHPP. This alternative meets the primary objectives of increasing energy efficiency, reducing government costs, while maintaining required reliability to support the mission.

This alternative includes the following elements:

- Constructing a step-up transmission substation on approximately 40,000 square feet between the Power Plant and the existing transmission line located approximately 1.4 miles east of the Power Plant. The location would be determined during later design phases, but would avoid any environmentally sensitive areas such as wetlands, floodplains, and Installation Restoration Program (IRP) sites,
- Clearing an approximately 150-foot wide by 1.4-mile long right of way (ROW) and constructing an electrical transmission line from the new substation to the existing 138-kV transmission line located immediately west of the Parks Highway. Although the transmission line has not yet been designed, similar lines in the vicinity have spans between poles of 300 to 750 feet. This spacing would eliminate pole placement in wetlands, floodplains or areas with undesirable soils. The poles would likely be wood H-Frame structures, approximately 70 feet tall, with about 10 feet of pole embedded,
- Constructing a centralized coal or biomass fired heat plant near the existing steam distribution line to the composite area to provide steam to the building heat exchangers,
- Constructing a backup generator within a new enclosure to provide backup power to the Composite area.

2.2.3 Alternative 3: Install Back-up Generators and Centralized Heat and Power Plants

Under this alternative, the Air Force would remain separate from the GVEA power grid and generators of sufficient size to power the entire station and a centralized coal fired heat plant would be constructed. Once construction was complete, Clear AFS would cease operation of the CHPP. This alternative meets the primary objectives of increasing energy efficiency, reducing government costs, while maintaining

required reliability to support the mission. However, economic analysis of this alternative shows that it is economically inferior to the grid tie –in option. This alternative includes the following required elements:

- Constructing a power generation facility capable of producing approximately 8MW with sufficient redundancy to ensure required mission capability and tied into the existing power distribution system. Power generation would most likely be by diesel engine powered electric generators. Required switch gear and synchronization equipment would be part of the new plant, and,
- Constructing a centralized coal or biomass fired heat plant near the existing steam distribution line to the composite area to provide steam to the building heat exchangers.

2.2.4 No Action Alternative

Under the No Action Alternative, the Air Force would continue to operate the CHPP at approximately 25 to 35 percent capacity, and inefficient practices would continue to be implemented to maintain operation of the boilers at a stable level. Required upgrades would still be implemented, but only as funding would permit.

While the No Action Alternative would not satisfy the purpose of or need for action, this alternative was retained to provide a comparative baseline against which to analyze the effects of the action alternatives, as required under Federal law.

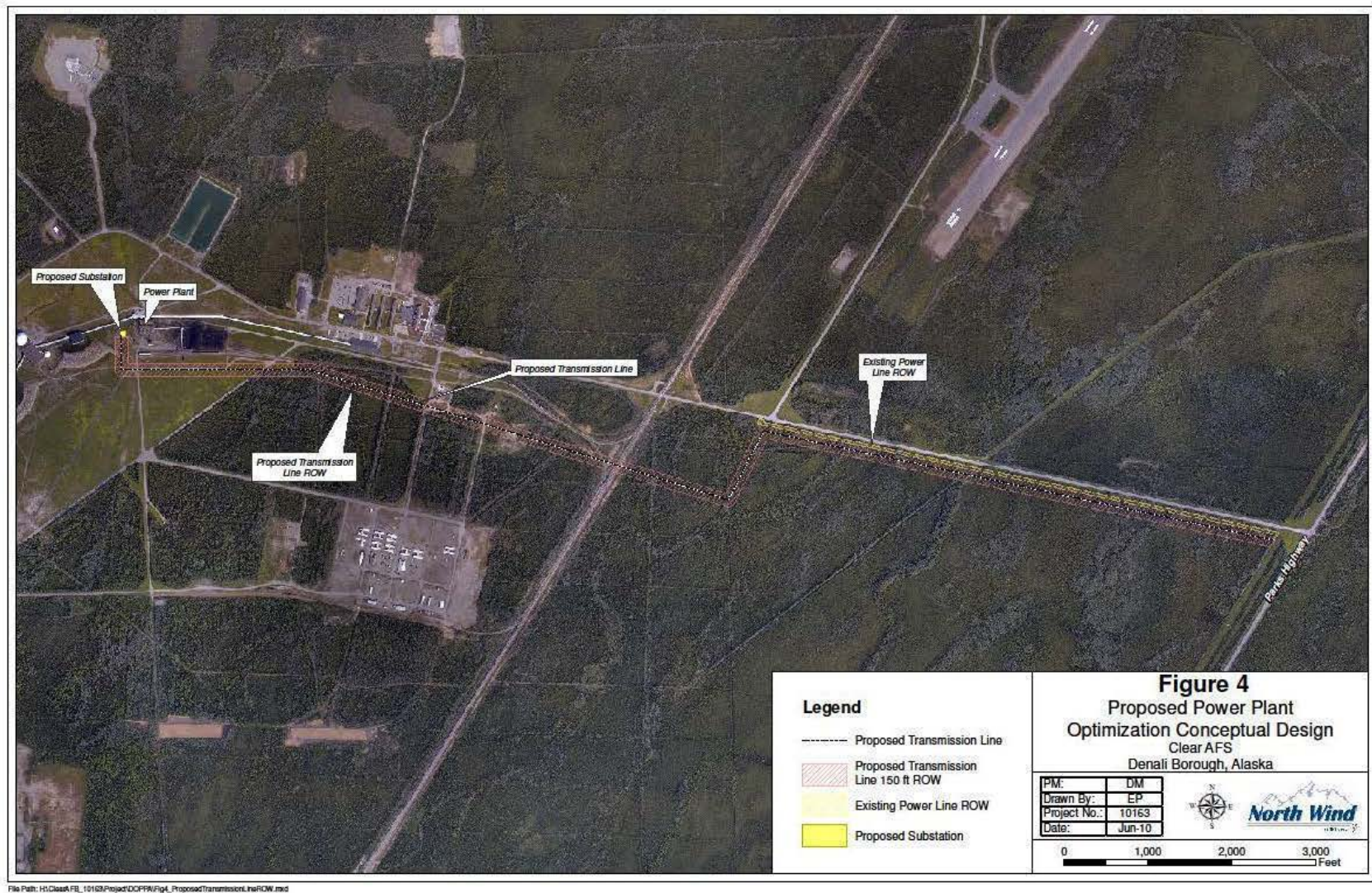


Figure 3. Proposed Grid tie Conceptual Design.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This section describes existing environmental and socioeconomic conditions at and surrounding the proposed project site located at Clear AFS, Denali Borough, Alaska. Emphasis is on those resources potentially impacted by the action alternatives. This section provides information that serves as a baseline from which to identify and evaluate any individual or cumulative environmental and socioeconomic changes likely to result from implementation of the No Action Alternative or the action alternatives. In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. Due in part to the remote location of Clear AFS and the minor overall nature of the proposed actions, impacts to certain resources would be negligible, and are therefore not discussed in detail in this EA. Those resources dismissed from detailed analysis are briefly addressed below.

3.1.1 Issues Eliminated from Detailed Analysis

Numerous resources are not analyzed in detail in this EA for the reasons summarized below. The decision to exclude these issues was based on previous studies conducted at Clear AFS, initial consideration on Air Force Form 813, *Request for Environmental Impact Analysis* (in the project file), and additional analysis conducted by the interdisciplinary team.

Noise: Noise would be generated by construction activities and operation of the boilers after construction is complete. Clear AFS is an active installation with construction activity ongoing throughout every summer. Construction activities for this project would not differ in any significant way from other construction projects that are common on the installation. The equipment used would not produce greater noise volumes than other activities typical for the area. The CHPP operation produces a constant drone which masks most construction noise on the installation. Construction work would occur during daylight hours when loud noises are tolerable. Those shift workers who normally sleep during the day are housed in rooms on site which reduce outside noise to normal background levels. Operating the new heat plants would produce noise volumes comparable to the current noise volumes within the mechanical rooms and would not disrupt activities in the rest of the buildings and would therefore not be significant. After the new heat plant is operational, the CHPP would be shut down and the overall noise level on the installation would decrease significantly. The nearest sensitive noise receptors are approximately 4 miles to the north (in the City of Anderson). Therefore, the construction activities associated with the action alternatives would result in a negligible, short-term, localized increase in noise levels on Clear AFS. This would not be noticeable in the context of other activities that are occurring on the installation.

Visual Resources: In general, the degree to which an action would modify the existing surroundings is used to assess the level of impact to visual resources. The action alternatives would not alter or change the visual characteristics outside of the installation. The proposed transmission line would be located collinear with a paved road and existing electrical distribution line within the installation boundaries. The substation would be constructed in a previously disturbed area adjacent to the existing Power Plant. The boilers would be constructed in additions to existing mechanical rooms. Therefore, impacts to visual resources off the installation would not occur and on the installation would be minimal.

Geology and soils: Geologic resources are limited, nonrenewable earth resources whose characteristics can easily be degraded by physical disturbances. For the purposes of this report, geologic resources include geology, topography, and soils. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. The FPPA applies to all projects that require new rights-of-way and that are planned for Federal funding; however, lands that are used for national defense purposes are exempt from

the provisions of the FPPA (7 CFR Parts 657 and 658). Therefore, this project is exempt from FPPA requirements. All of the construction will be done within the boundaries of Clear AFS with minimal disturbance to the soil and with no disturbance below approximately 10 feet. All normal and reasonable precautions to prevent spills or contamination will be employed. Effects to the soil resource from the proposed project include minor increased potential for erosion and compaction by construction activities. However, because slopes are so low in the project area, soil erosion impacts are expected to be negligible.

Standard construction BMPs would be used by the contractor to minimize impacts on soil resources. These would include practices such as minimizing the construction footprint to the extent possible, for example, removal of vegetation would be limited as much as possible to reduce the amount of soils disturbed during the installation of the transmission line and the substation. In areas where larger ground disturbing activities would occur, fugitive dust abatement measures may need to be implemented. Additional project specific BMPs may be identified before implementation of the project if conditions beyond those normally experienced are anticipated.

Seismic Potential: Alaska is periodically shaken by severe earthquakes. Several faults near the installation are considered active. The Denali Fault is located approximately 60 miles south of Clear AFS. Several other large, east-west trending faults, including the Hines Creek and McKinley Faults, also occur south of Clear AFS. Large earthquakes, with Richter magnitudes up to 7.8, have been recorded in the Fairbanks area. In 1947, an earthquake with an intensity of 8+ on the Mercalli Scale was centered at Clear and in November of 2002, a 7.8 quake rocked the Denali Fault line. The study area lies in a seismic zone 3, where major earthquake damage and peak ground accelerations (ranging from 0.2 g to 0.3 g) have a 10 percent probability of occurring at least once in 50 years (Algermissen et al. 1990). Earthquake potential is the only recognized geological constraint to development at Clear AFS. However, all structures would be designed to withstand magnitude seven or higher events with little or no effect.

Groundwater: Construction would not impact groundwater. The depth to groundwater is approximately 60 to 100 feet below ground surface in the project area. The contractor would be required to comply with all Federal, State, and local laws and regulations controlling pollution and contamination of the environment to ensure that no effects to groundwater occur. BMPs would be used to prevent pollution of groundwater with any contaminant including hazardous or toxic materials.

Surface Water: The nearest surface water to the project area is the Power Plant cooling pond and open channel located about 1/2 mile to the north. Because of this distance, the relatively flat terrain near the project area, and the relatively fast-draining soils, no impacts to surface water would be expected from construction. The contractor would be required to comply with all Federal, State, and local laws and regulations controlling pollution and contamination of the environment to ensure that no effects to surface water occur. BMPs would be used to prevent pollution of surface water with any contaminant including hazardous or toxic materials.

Floodplains: The construction site is located approximately three miles east of the 100-year floodplain of the Nenana River; therefore, potential construction in this area is not constrained by the floodplain and no impacts to floodplains would be expected from the project.

Historic Resources: This project will not affect any eligible or potentially eligible historic properties. In 1995, Argonne National Laboratory conducted an inventory and evaluation of Cold War-Era properties at 21st Space Wing installations (Argonne National Laboratory 1995). Eight BMEWS buildings/structures (Buildings 101, 102, 104, 105, 106 and Structures 735, 736 and 737) at Clear AFS were identified as potentially eligible for listing in the NRHP. No other properties on Clear AFS were determined to have “exceptional importance”. Consultation with the Alaska SHPO identified the need for a Memorandum of Agreement (MOA) and Historic American Engineering Record documentation to ensure steps be taken to

save historically significant items in the context of Cold War operations. The MOA was signed by all stakeholders as of May 24, 2004. All mitigation activities addressed in the MOA are complete with an updated status submitted to the SHPO. Other structures have been determined by the Air Force to not need additional analysis when they become 50 years old.

Consultation: Clear AFS is located within the traditional territory of the Nenana-Toklat band of the Lower Tanana Athapaskans (McKenna 1981). There are no protected Tribal resources that have been identified on Clear AFS property. Clear AFS has completed consultation with the Nenana Native Council and has entered into an agreement documenting the consultation. There is no record of the Nenana Native Council exerting an interest in historic uses of the property and consultation sessions in 2005 and 2006 did not indicate an interest beyond project planning and inadvertent discoveries. There are no other protected cultural resources identified on Clear AFS property. There are no plans that involve research and consultation with appropriate affiliated Indian Tribes and other interested parties to identify cultural landscapes, sacred sites, and other related cultural resources because none is expected to be found. If an unexpected discovery is made, appropriate consultation with local tribes and interested parties will be initiated.

Utilities: Implementation of the project would result in insignificant short-term impacts to water, sewer, and electrical infrastructure components at the installation. Utility usage would be expected to increase slightly due to the temporarily increased labor force; however, the existing infrastructure has ample capacity to handle the increase. The project would result in insignificant beneficial impacts to the electrical system at Clear AFS. The proposed transmission line would allow Clear AFS to reduce electrical consumption by elimination of the load banks. Implementation of the project would result in insignificant impacts to the existing water supply system. After project implementation and subsequent shut down of the CHPP, water usage would decrease by about 3MGD. The overall number of employees would decrease by approximately 30 persons. Insignificant short and long-term impacts to solid waste would result from implementation of the project. Coal ash disposal would be eliminated and a slight decrease in municipal waste would be expected due to the decrease in personnel and facility maintenance.

Hazardous Material and Waste: The presence of hazardous wastes would become an issue within the proposed transmission line corridor and in the substation location if these substances are stored or handled improperly, or if they are encountered during construction, resulting in inadvertent releases to the environment. However, construction projects such as this are ongoing all of the time at Clear AFS and routine precautions have been implemented to prevent improper handling and spills. All construction activities would comply with all applicable Federal, State and local laws and regulations regarding the use of hazardous substances. Staging areas would be kept in an orderly condition throughout the construction period. Contractors would have on site, and would implement the procedures contained in the Clear AFS Spill Prevention, Control and Countermeasures (SPCC) Plan, and would follow other BMPs for the control of waste, and would otherwise provide for the safety of workers and the public. Any release of hazardous or toxic materials into the environment during construction would require immediate corrective action by the contractor in accordance with applicable State and Federal regulations. The SPCC Plan would be implemented during construction to minimize environmental impacts from potential spills and to ensure prompt and appropriate remediation. No hazardous or solid waste impacts are anticipated from operation and/or maintenance of the proposed transmission line and substation, operation of the heat plant(s) would involve small additional amounts of waste petroleum products and glycols. Clear AFS has plans in place to manage these products safely and no significant additional risk is presented by their addition. The same practices described for construction activities would apply during maintenance activities.

While asbestos or lead based paint may be encountered during the expansion of the existing mechanical rooms and within the utilidors, Clear AFS has comprehensive plans in place for dealing with these

products. All work would be done in compliance with Federal and State regulations as well as the OSHA Asbestos Standard (29 CFR 1926.58) which provides worker protection for employees who work around or remediate asbestos-containing material (ACM).

Clear AFS falls under the EPA Zone 3 classification for Radon, which has the least potential for the indoor radon exposure, with average indoor concentrations of less than two picocuries per liter. Radon exposure has not been an issue of concern in past construction projects.

Installation Restoration Program: The DoD's *Defense Environmental Restoration Program* (implemented for the Air Force by AFI 32-7020, *Environmental Restoration Program*) requires installations to identify, confirm, quantify, and remediate suspected problems associated with past hazardous material disposal sites. CERCLA provides USEPA with the authority to inventory, investigate, and cleanup uncontrolled or abandoned hazardous waste sites. Areas with historical contamination from hazardous materials or wastes through spills or leaks are being investigated and cleaned up through the IRP, the Air Force's CERCLA-based environmental restoration program.

There are 26 IRP and 4 Military Munitions Response Program sites on Clear AFS, however, this project will not impact any of the sites.

3.2 Geographic Setting and Location

Clear AFS is located in the Denali Borough, an incorporated borough in central Alaska, near the community of Anderson. Other relatively nearby towns include Nenana, which is located 19 miles to the north, and Healy, which is located 30 miles south of the installation. The installation is approximately 78 miles southwest of Fairbanks and approximately 50 miles north of the entrance to Denali National Park. The main entrance to the installation is 2 miles west of the Parks Highway. This is the only paved and maintained vehicular access to the installation. Clear AFS consists of 11,438 acres of land, approximately 350 acres of which are currently developed. The remainder of the installation is heavily forested primarily with black spruce, white spruce, aspen, and birch trees. The installation is approximately 156 miles south of the Arctic Circle at an average elevation of 595 feet above mean sea level (AMSL). It is located on a broad glacial fluvial outwash plain about 10 miles north of the base of the Alaskan Range.

3.3 Air Resources

This section describes the climatic conditions and other factors that influence and define the quality of air resources in and around Clear AFS. Regulatory requirements including air quality standards, operating permits, and greenhouse gases are presented. Existing conditions of air resources at Clear AFS are described and include discussions of climate, meteorology, sensitive receptors, and existing regional and local air emissions.

3.3.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin (in particular, features such as mountains or valleys which may inhibit the dispersion of pollutants), and the prevailing meteorological conditions (temperature, wind speed and direction, temperature inversions). Pollutant concentrations near emission sources are generally highest with a calm atmosphere or strong temperature inversion, both of which limit the transport and dispersion of pollutants away from the emission source.

Air quality in a given location is described by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The significance of a pollutant concentration is determined by comparing it to Federal and State ambient air

quality standards. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare, with a reasonable margin of safety.

3.3.2 Requirements

Air quality standards, air operating permits, and information about greenhouse gases are presented in this section.

3.3.2.1 Air Quality Standards

All stationary and mobile sources of air pollutants within a region affect the overall air quality of that area. Air quality is a measure of the cleanliness of the ambient air, and can be characterized in terms of whether or not it complies with the National Ambient Air Quality Standards (NAAQS). The CAA, as amended, requires the USEPA to review and set NAAQS for pollutants considered harmful to public health and the environment. NAAQS have been established for principal pollutants, called “criteria pollutants” (as listed under Federal Regulation 40 CFR 50 and Section 108 of the CAA), and various averaging periods. ADEC has adopted standards similar to the NAAQS (i.e., Alaska Ambient Air Quality Standards [AAAQS] 18 AAC 50.010), and includes several other pollutants. The NAAQS and AAAQS, as of August 2012, are presented in **Table 1**.

The USEPA is responsible for characterizing and designating an area’s air quality as either “attainment,” “non-attainment,” “maintenance,” or “unclassified” with respect to the NAAQS. A designation is made for each NAAQS pollutant based on ambient air monitoring data collected and verified by the state environmental agencies:

- A designation of “attainment” means the region is in compliance with the NAAQS.
- In areas where a NAAQS is not being met, a “non-attainment” status may be designated only for the pollutant that does not meet its specific NAAQS.
- Areas that previously have been classified as "nonattainment" for a specific pollutant but are now in compliance may be redesignated as "maintenance" if the state has completed an air quality maintenance plan and has successfully demonstrated that the plan is effective in producing necessary emission reductions along with air quality improvements.
- Areas for which no monitoring data is available may be designated as “unclassified,” and are by default considered to be in attainment of the NAAQS.

These designations are generally assigned to Air Quality Control Regions (AQCRs) defined by the state and federal governments, or to subareas (i.e., individual counties or boroughs) within AQCRs. Clear AFS is located within Denali Borough which is part of the Northern Alaska Intrastate AQCR as defined in 18 AAC 50.015 and 40 CFR 81.302. Good air quality exists in this area, which is designated as attainment or unclassifiable for all NAAQS and AAAQS (40 CFR 81.302 and USEPA 2011a). However, a small portion of the Northern Alaska Intrastate AQCR near Fairbanks is designated non-attainment for 24-hour PM_{2.5}. It is located 80 miles to the northeast of Clear AFS and is identified as the Fairbank North Star Borough non-attainment area. This area was also formerly designated as non-attainment for CO, but was reassigned by USEPA as “maintenance” for CO on September 27, 2004. It is currently under a maintenance plan to monitor and ensure that compliance with the CO air quality standards can be maintained through the plan’s control strategies. The Clear AFS facility is sufficiently distant (80 miles) from Fairbanks that it is not affected by requirements of this PM_{2.5} non-attainment and CO maintenance area.

There are currently two other non-attainment areas in Alaska: Anchorage Municipality for PM₁₀ and Juneau City and Borough for PM₁₀. Both of these areas are at a significant distance from Clear AFS and do not impact the air quality near the installation.

Table 1. Federal and State Ambient Air Quality Standards.			
Pollutant	Averaging Period	Federal NAAQS	State AAAQS
Carbon Monoxide (CO)	1-hour	40,000 µg/m ³	40,000 µg/m ³
	8-hour	10,000 µg/m ³	10,000 µg/m ³
Lead (Pb)	3-month rolling	0.15 µg/m ³	0.15 µg/m ³
Nitrogen Dioxide (NO ₂)	1-hour	189 µg/m ³	---
	Annual	100 µg/m ³	100 µg/m ³
Particulate Matter ≤ 10 microns (PM ₁₀)	24-hour	150 µg/m ³	150 µg/m ³
	Annual	---	50 µg/m ³
Particulate Matter ≤ 2.5 microns (PM _{2.5})	24-hour	35 µg/m ³	35 µg/m ³
	Annual	15 µg/m ³	15 µg/m ³
Ozone (O ₃)	8-hour	0.075 ppm	0.075 ppm
Sulfur Dioxide (SO ₂)	1-hour	196 µg/m ³	---
	3-hour	1,300 µg/m ³	1,300 µg/m ³
	24-hour	365 µg/m ³	365 µg/m ³
	Annual	80 µg/m ³	80 µg/m ³
Reduced Sulfur Compounds	30-minute	---	50 µg/m ³
Ammonia	8-hour	---	2,100 µg/m ³
<ul style="list-style-type: none"> • AAAQS = Alaska Ambient Air Quality Standards • NAAQS = National Ambient Air Quality Standards • ppm = parts per million • µg/m³ = micrograms per cubic meter 			

3.3.2.2 Air Operating Permits

As a means of tracking and limiting air pollutant emissions, State and Federal air regulations require any stationary source (i.e., facility) with emissions above certain thresholds of criteria pollutants and/or Hazardous Air Pollutants (HAPs) to obtain an air operating permit that defines the terms and conditions for the air emission operations at the facility. A permit identifies the facility's air emission sources, allowable emission levels, and conditions of operation. Air permitting programs are defined in the United States Code (USC § 7401-7671q) federal air quality regulations (40 CFR 50-97) and Alaska air quality regulations (18 AAC 50).

General Information

A facility will generally be placed into one of three air permitting programs depending on its potential to emit (PTE): either State-only, Federal Title V, or Federal PSD. A facility with a PTE less than 100 tons per year (tpy) of each criteria pollutant, 10 tpy for each individual HAP, and 25 tpy of total HAPs is classified as a minor source and would operate under a State-only minor air permit (40 CFR 70; 18 ACC 50.502-560). A facility with the potential to exceed any of these thresholds is classified as major for Title V and must obtain an air permit under the Title V air permit program of the CAA (§ 501-507; USC § 7661-7661f; 18 AAC 50.326). A facility with the potential to emit more than 250 tpy of any criteria pollutant (or 100 tpy for certain types of facilities) is classified as major for PSD. The PSD permitting program was established by the USEPA (CAA § 160-169b; USC § 7470-7492; 40 CFR 52.21; 18 ACC 50.306) to allow emission increases that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded NAAQS. Under the PSD permitting program, the requirements for a facility to obtain a PSD operating permit depend on installation date of the emission equipment, modification dates for existing equipment, and the level of emission increases associated with new or modified equipment. **Table 2** lists the emission levels that trigger the need for a PSD review and permit. A facility that exceeds the applicable PSD emission levels must obtain a Federal PSD operating permit unless a request is made to include federally enforceable operating and/or emission limits in order to restrict potential emissions below the applicable level.

A facility that requests, and is granted, operating conditions (such as limits on operating hours, fuel consumption, or material throughput) or uses pollution control equipment to restrict PTE below a major source threshold is classified as a synthetic minor source. For example, a facility that would have had a PTE of 250 tpy for PM₁₀ (a criteria pollutant), but instead chose operating limits to restrict PTE to 150 tpy would be a synthetic minor for PSD permitting, but would still be major for Title V permitting. Facilities that operate as a synthetic minor (under either Federal permit program) will have requirements to regularly track and report certain emissions to ensure that the facility is maintaining its emissions below the respective major source threshold levels. The CAA delegates authority to the individual states to implement and manage the Title V (USC § 7661a; 18 AAC 50.326) and PSD (40 CFR 52.21; 18 ACC 50.306) air permitting programs.

Clear AFS

Clear AFS currently operates under Federal Title V Operating No. AQ0318TVP03, which was issued by ADEC in October 2012 and is valid until October 2017.

Based on Clear AFS's PTE and status as a fossil fuel-fired electric steam plant with more than 250 million Btu/hr heat input capacity, the facility is classified as an existing major source for both Title V and PSD. However, the base has chosen operating limits on steam production and fuel consumption limits for the coal-fired boilers and certain emergency diesel-fired generators/well pumps. Therefore, the facility is not classified as a major source for HAPs.

Table 2. Emission Levels Requiring Federal PSD Permit.

Table 2: Emissions of Pollutants from Existing Facilities and New Facilities			
Pollutant	New Facility (tpy)	Specific Types of New Facilities ^(A) (tpy)	Major Modification at Existing Major Facility (tpy)
Carbon Monoxide (CO)	250	100	100
Nitrogen Dioxide (NO ₂)			40
Sulfur Dioxide (SO ₂)			40
Volatile Organic Compounds (VOCs)			40
Particulate Matter (total) (PM)			25
Particulate Matter ≤ 10 microns (PM ₁₀)			15
Hydrogen Sulfide (H ₂ S)			10
Sulfuric Acid Mist			7
Fluorides, except HF which is excluded			3
Lead (Pb)			0.6
(A) The Federal PSD program includes a group of specific facilities that are subject to a 100-tpy PSD major source threshold. This includes fossil fuel-fired steam electric plants with an operational capacity of more than 250 million Btu heat input per hour. Since Clear AFS has three coal-fired units rated at 177 million Btu/hr, or a total operational capacity of 531 million Btu/hr, it is subject to the 100-tpy PSD major source threshold.			

3.3.2.3 Greenhouse Gases

Greenhouse Gases (GHG) refer to gases that are present in the atmosphere and have the ability and tendency to affect the earth's atmospheric temperature through a physical process involving light and thermal energy. GHGs exist in the atmosphere as a result of both natural processes and human activity. Among the most prominent GHGs associated with human activities are carbon dioxide (CO₂), methane (CH₄), and nitrogen oxides (NO_x). These gases are mainly a byproduct of fossil fuel (i.e., gasoline, diesel, oil, coal, and natural gas) combustion or the combustion of other organic matter, such as wood. In recent years, GHG emissions from human activity have become a focus of concern and scrutiny as these may relate to climate change.

On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States (40 CFR 98). The purpose of the rule is to collect comprehensive and accurate data on CO₂ and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO₂ equivalent per year. The first emissions report for 2010 emissions was due September 30, 2011, and Clear AFS reported 89,970 tons of CO₂ equivalent emissions. Although GHGs are not currently regulated under the CAA, the USEPA has clearly indicated that greenhouse gas emissions and climate change are issues that need to be considered in future planning.

The CEQ recently issued draft guidance (CEQ 2010) regarding GHG emissions and the NEPA process. Specifically, the guidance is intended to assist Federal agencies (and Federal decision-makers) in evaluating or describing the environmental effects of GHG emissions from proposed Federal actions. The guidance advises Federal agencies preparing a NEPA document to consider whether the decision-makers

would benefit from the inclusion of an analysis of GHG emissions and climate change issues relating to the Proposed Action. Specifically, if the Proposed Action is anticipated to have direct emissions of 25,000 metric tons or more of CO₂-equivalent GHG emissions on an annual basis, the Federal agency should consider this as an indicator that a quantitative and qualitative assessment may be meaningful to decision-makers and the public.

3.3.3 Existing Conditions

The existing conditions of air resources for Clear AFS are described below. Included are discussions of climate and meteorology, sensitive receptors, and regional and local air emission levels.

3.3.3.1 Climate and Meteorology

Clear AFS is located in Denali Borough within interior Alaska approximately 160 miles south of the Arctic Circle. The region has a subarctic continental climate characterized by extreme seasonal variability in solar radiation, long cold winters, short mild summers, and noticeable changes in the daily weather throughout the year. Temperature inversions can occur frequently in this area.

Clear, Alaska has a mean annual temperature slightly below freezing at 26° Fahrenheit (°F) with an average daily temperature ranging from -9°F in January to 62°F in July (ACRC 2011 and WRCC 2011). Recorded temperature extremes range from -63°F (1975) to 96°F (1969). Total precipitation averages 13 inches per year (water equivalent) with summer and autumn months being the wettest; and snowfall averaging 50 inches per year (accounting for approximately 5 of the 13 inches per year water equivalent). Climatological wind information from Nenana, 20 miles to the north, indicates prevailing winds of 4-6 miles per hour (mph) from the east to east-northeast for most of the year, with a secondary prevalence from the west to southwest during June and July. Climatological wind information from Healy, 30 miles to the south and in the Nenana River Valley at the foot of the Alaska Range, indicates prevailing winds between 4-8 mph from the south-southeast each month of the year. The winds at the town of Nenana are more representative of the conditions at Clear because of the similarity and flatness of the surrounding topography. The winds at Healy are significantly influenced by the orientation of the Nenana River Valley through the Alaska Range, demonstrating the funneling effect of the local mountain topography.

3.3.3.2 Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the population at large. Sensitive receptors include health care facilities, retirement homes, schools, playgrounds, and childcare centers. Although there are no sensitive receptors on Clear AFS, the Denali Borough School District includes three schools along an 80-mile stretch of Parks Highway, as well as a statewide correspondence school. These schools are located 4 miles to the north (Anderson School), 20 miles to the north (Nenana City Public School), and 30 miles to the south in Healy (Tri-Valley School). A childcare center and a health care clinic are also located in Healy (Tri-Valley Community Center). The nearest hospital to Clear AFS is located 60 miles to the northeast in the City of Fairbanks, although Clear AFS does have a health clinic for personnel and military dependents.

Sensitive environments, such as national parks and wilderness areas, are also more susceptible to the effects of air pollution than the general environment. The Federal government has identified specific areas throughout the nation that are afforded special protection against air pollution and impairment of visibility. These protected areas, referred to as Class I Federal Areas, are defined under the CAA (42 USC § 7491) and Federal regulations (40 CFR 81 Subpart D) as national parks greater than 6,000 acres, wilderness areas, national memorial parks greater than 5,000 acres, and international parks that existed in 1977. The nearest Class I area is Denali National Park which covers approximately 2 million acres, and whose northern border is 20 miles south of Clear AFS.

3.3.3.3 Existing Air Emission Levels

Air emission levels from all activity within Denali Borough are available from the National Emissions Inventory (NEI) and Clear AFS annual air emission inventories. The NEI is compiled periodically by the USEPA. Data from the most recent inventories are listed in **Table 3**. These inventories provide estimates of criteria pollutant emissions associated with industrial sources, residential wood burning, mobile sources, off-road equipment, and other miscellaneous sources. Emission estimates of HAPs are not provided directly through the NEI browser website interface.

TABLE 3. EXISTING EMISSION LEVELS FOR DENALI BOROUGH, ALASKA (TPY).							
Year	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC	HAPs
2002 ^(A)	1,923	342.3	909.6	125.8	163.1	278.6	-
2008 ^(B)	2670	1,043	1,071	176.4	726.8	303.8	-
(A) - The 2002 data is from the USEPA National Emissions Inventory Browser (USEPA 2011) (http://www.epa.gov/ttn/chief/eiinformation.html) and includes Clear AFS. (B) - The 2008 data from the National Emissions Inventory Browser includes the Healy Coal Power Plant but not Clear AFS. In order to complete the 2008 regional emissions data, the U.S. Air Force Draft 2008 Air Emissions Inventory for Clear Air Force Station, Alaska (see Table 4) was added to the 2008 National Emissions Inventory Data.							

Information about the actual emissions from Clear AFS was compiled from annual emissions inventories developed by the base and is listed in **Table 4**. In addition, the permitted potential emissions (i.e., PTE) are listed for comparison of Clear AFS's historical actual emissions to the allowable emission levels under their current air operating permit.

TABLE 4. HISTORICAL EMISSIONS DATA FOR CLEAR AFS (TPY).							
Year	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC	HAPs
1997 ⁽¹⁾	196.1	536.9	63.1	-	263.0	4.7	53.6
2009 ⁽²⁾	137.0	241.4	50.8	19.4	239.3	2.2	4.4
2010 ⁽³⁾	133.0	234.4	17.5	3.7	195.1	1.7	2.6
2011 ⁽⁴⁾	127.3	224.9	16.4	3.0	204.5	2.2	2.5
2012 ⁽⁵⁾	129.6	231.2	9.7	2.4	225.7	2.5	2.6
Potential Emission Levels ⁽⁶⁾	345.9	632.6	209.5	88.3	945.8	6.3	11.1
(1) Source: USAF, Air Force Space Command, 1997-1998 Air Emissions Inventory, Clear AFS, Alaska. (2) Source: USAF, 2009 Air Emissions Inventory for Clear AFS, Alaska. (3) Source: USAF, 2010 Air Emissions Inventory for Clear AFS, Alaska. (4) Source: USAF, 2011 Air Emissions Inventory for Clear AFS, Alaska. (5) Source: USAF, 2012 Draft Air Emissions Inventory for Clear AFS, Alaska. (6) Potential emissions submitted to ADEC with the Federal Title V operating permit for Clear AFS (Permit No. AQ0318TVP02) renewal application. These represent the emission levels associated with the facility operation at maximum levels allowed by the operating permit.							

3.4 Biological Resources

The following sections describe the existing condition of biological resources at Clear AFS. Most of the information in this section was obtained from the current General Plan for Clear AFS (USAF 2012a). Vegetation, wildlife, and state and federally threatened and endangered species are discussed below and represent the current conditions in the vicinity of the proposed project area.

3.4.1 Definition of the Resource

Biological resources are defined for the purposes of this EA as vegetation and wildlife (including threatened/endangered species) and the habitats in which they occur. Sensitive and protected biological resources include species listed as threatened or endangered by the Federal government or State agency. This section describes the existing biological environment at Clear AFS within the proposed project area. The focus is on vegetation, wildlife, and protected and sensitive species known or likely to occur within the proposed project area that would be affected by the alternatives should they be implemented. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species; designated or proposed critical habitat; species protected under other Federal laws; species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

3.4.2 Requirements

The ESA (16 USC 1536) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. Under the ESA, an “endangered species” is defined as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. Under the ESA, Federal agencies are required to provide documentation that ensures that agency actions will not adversely affect the existence of any federally threatened or endangered species. The ESA requires that all Federal agencies avoid “taking” threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with concurrence on a determination of the risk of adverse effects from a Federal agency project.

The USFWS also maintains a list of species considered candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant protection under the Act. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a threatened and endangered species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. AFI 32-7064, Integrated Natural Resource Management, provides the Air Force with guidance on compliance with the ESA and Federal, State, and local environmental regulations. Per comment by the Fairbanks Fish and Wildlife Field Office, the proposed project may be located in an area where priority bird species of conservation concern occur, such as the rusty blackbird, blackpoll warbler, gray-cheeked thrush, and white-winged crossbill. Rusty blackbirds also are listed as a priority species for conservation in Alaska’s Comprehensive Wildlife Conservation Plan (Alaska Department of Fish and Game 2006), and in the Northwestern Interior Forest All Bird Conservation Plan (Sharbaugh 2007). The Migratory Bird Treaty Act (50 CFR 21) governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by the Act’s regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be

limited to levels that prevent overuse. The Act also prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11). EO 13186 (effective 10 January 2001) outlines the responsibilities of federal agencies to protect migratory birds, in accordance with the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Coordination Act, ESA, and NEPA. This order specifies the following:

- The USFWS is the lead for coordinating and implementing EO 13186;
- Federal agencies are required to incorporate migratory bird protection measures into their activities; and
- Federal agencies are required to obtain permits from USFWS before any “take” occurs, even when the agency intent is not to kill or injure migratory birds.

3.4.3 Existing Conditions

3.4.3.1 Vegetation

In 2005, the NRCS conducted a vegetative survey of Clear AFS. The survey report indicated that the dominant vegetation consists of boreal spruce and broadleaf forest, quaking aspen forest (primarily in disturbed soils and along forest borders of access roads), and ericaceous shrub forest (NRCS 2005). Based on that study and field verification, the proposed electrical transmission line route would traverse the following community types:

- Quaking aspen/mixed shrub-herb forest;
- Black spruce/ericaceous shrub forest;
- Black spruce/ericaceous shrub forest—Quaking aspen/ericaceous shrub forest complex; and
- Quaking aspen/ericaceous shrub forest—Black spruce/ericaceous shrub forest complex.

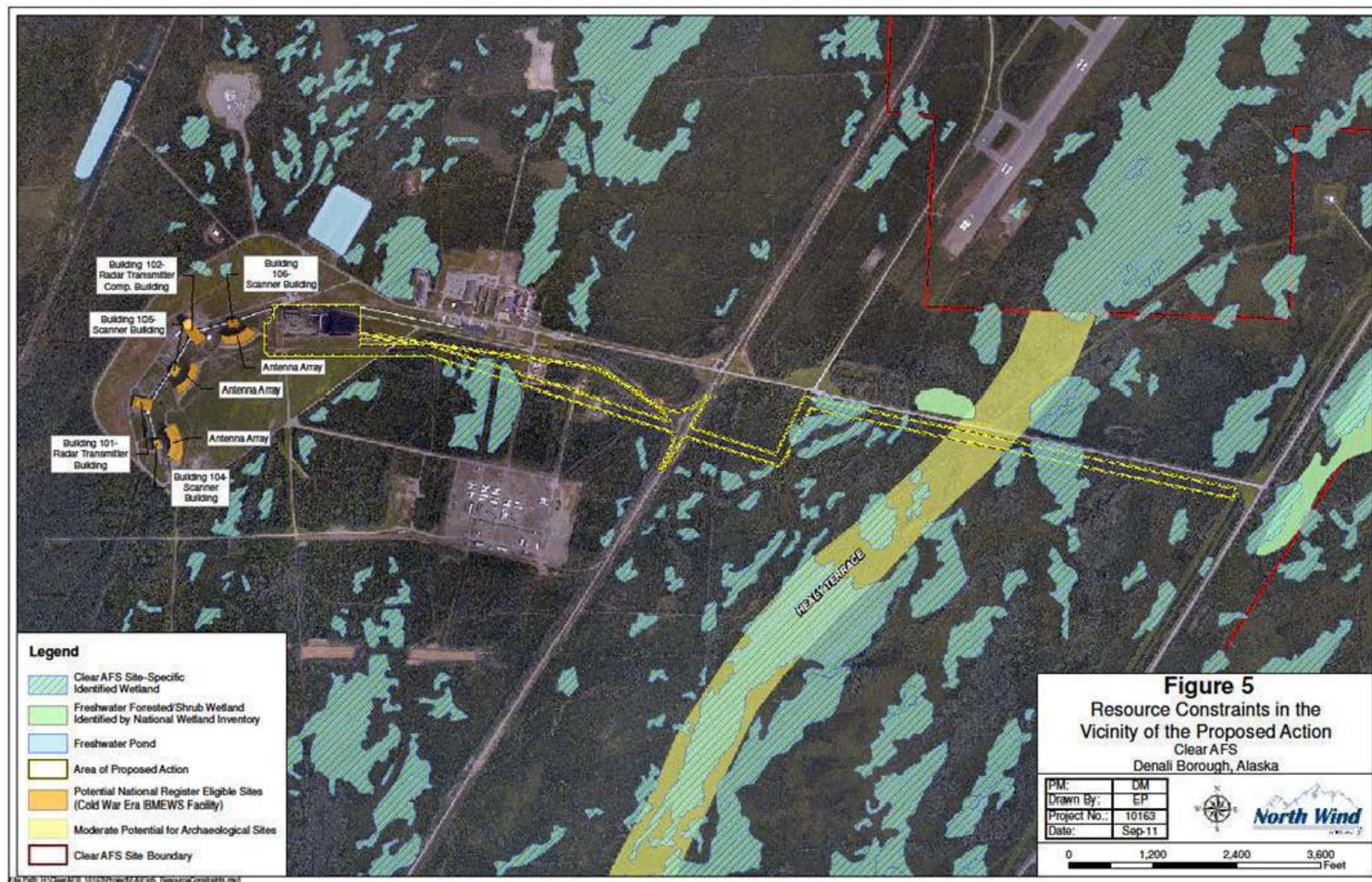


Figure 4. Resource Constraints in the Vicinity of the Project Area.

Table 5 shows the estimated acreages of these community types that occur within the proposed electrical transmission line ROW. All other proposed activities would occur on developed or semi developed (i.e., mowed grass) land.

The Alaska Natural Heritage Program (AKNHP) invasive species mapping website, (<http://aknhp.uaa.alaska.edu/maps/akepic/>) indicates the possible presence of several invasive species in the area, including the highly invasive white sweet clover.

Wildlife likely to occur in the vicinity of the project area includes species typical of rural areas in Alaska. Common bird species include common raven (*Corvus corax*), Canada goose (*Branta canadensis*), dark-eyed junco (*Junco hyemalis*), and the mew gull (*Larus canus*). Common mammals include brown bear (*Ursus arctos*), black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), porcupine (*Erethizon dorsatum*), snowshoe hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), beaver (*Castor canadensis*), and moose (*Alces alces*) (AKNHP 2009).

Table 5. Vegetative Communities within the Proposed Transmission Line Right of Way.			
Community Type	Linear Feet Within proposed ROW	Acreage within Proposed ROW	Percent of ROW Area
Quaking aspen/mixed shrub-herb forest	820	2.8	6
Black spruce/ericaceous shrub forest	1,640	5.6	11
Black spruce/ericaceous shrub forest—Quaking aspen/ericaceous shrub forest complex	4,510	15.5	31
Quaking aspen/ericaceous shrub forest—Black spruce/ericaceous shrub forest complex	6,230	21.5	42
Developed Areas	1,580	5.4	10
Total	14,780	50.8	100

3.4.3.2 Threatened and Endangered Species

In a report dated February 2009, the Alaska Natural Heritage Program (AKNHP) stated that no Federally listed plant, avian, or mammal species are known to occur on Clear AFS (AKNHP 2009). However, the AKNHP identified several State species of concern with the potential to occur on the installation. The AKNHP identified four regionally rare plant species of concern: polar milkvetch (*Astragalus polaris*), William's milkvetch (*Astragalus williamsii*), Setchell's willow (*Salix setchelliana*), and William's campion (*Silene menziesii* ssp. *williamsii*). None of these species were identified within the proposed project area (AKNHP 2009). The nearest occurrence was a population of William's campion, which was identified near Lake Sansing. All other occurrences were in the southwest portion of the installation.

The report also identified five bird species that are considered species of conservation or management concern by various State, Federal, national and/or non-governmental organizations. These include the blackpoll warbler (*Dendroica striata*), gray-cheeked thrush (*Catharus minimus*), osprey (*Pandion haliaetus*), rusty blackbird (*Euphagus carolinus*), and white-winged crossbill (*Loxia leucoptera*) (AKNHP 2009).

3.5 Cultural Resources

3.5.1 Definition of the Resource

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. They include archaeological resources (both prehistoric and historic), historic architectural resources, and American Indian sacred sites and traditional cultural properties. Under 36 CFR 800, federal agencies must take into consideration the potential effect of an undertaking on “historic properties,” which refers to cultural resources listed in, or eligible for inclusion in the Nation Register of Historic Places (NRHP), in accordance with the NHPA of 1966, as amended.

3.5.2 Requirements

Requirements set forth in the following regulations define the basis of compliance responsibilities for management of cultural resources at Clear AFS:

- Archeological and Historic Preservation Act,
- The Archeological Resource Protection Act,
- The American Indian Religious Freedom Act,
- Religious Freedom Restoration Act,
- The NHPA of 1966, as amended,
- The Native American Graves Protection and Repatriation Act,
- Cultural Resource Management (AFI 32-7065),
- Department of Defense Instruction 4715.16, Cultural Resources Management,
- DoD American Indian and Alaska Native Policy,
- 36 CFR Part 800, Protection of Historic Properties,
- 36 CFR part 60, NRHP,
- 36 CFR Part 78, Waiver of Federal Agency Responsibilities under Section 110 of the NHPA,
- 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections,
- Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation,
- National Register Bulletins,
- Legacy Resource Protection Program Act of 1992,
- EO 11593, Protection and Enhancement of the Cultural Environment,
- NEPA,
- EO 13007, and
- Presidential Memorandum on Government-to-Government Relations with Native American Tribal Governments.

Cultural resource management at Air Force installations is specifically established in AFI 32-7065, Cultural Resources Management. AFI 32-7065 details compliance requirements for protecting cultural

resources through an Integrated Cultural Resources Management Plan (ICRMP). Clear AFS completed an ICRMP in 2012 (USAF 2011). The ICRMP includes an inventory and evaluation of all known cultural resources; identification of the likely presence of other significant cultural resources; description of installation strategies for maintaining cultural resources and complying with related resource statutes, regulations, policies, and procedures; standard operating procedures and action plans that include budget, staffing and scheduling activities; clear identification and resolution of the mission impact on cultural resources; and conformance with local, state, and federal preservation programs. Clear AFS's ICRMP discusses building and property surveys; procedures for consultation with the Alaska SHPO and Alaska Native groups; agreements developed from these consultations; and other program responsibilities as directed by AFI 32-7065.

CEQ regulations (40 CFR 1501.2) require consultation with "...Indian tribes and with interested private persons and organizations when its own involvement is reasonably foreseeable." The DoD American Indian and Alaska Native Policy (October 1998) requires "consulting with, tribal governments prior to taking any actions that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands." Clear AFS continues to involve the Nenana Native Council in the program development and execution through implementation of a Comprehensive Agreement. The Comprehensive Agreement serves as documentation of ongoing consultation and cooperation between Clear AFS and the Nenana Native Council in accordance with the DoD American Indian/Alaska Native Policy: Alaska Implementation Guidance (2001). Additionally, it provides the basis for all future discussions and coordination with the Nenana Native Council as directed by the Comprehensive Agreement.

3.5.3 Existing Condition

Archaeological resources identified at Clear AFS are discussed below, along with consultation with local Indian tribes.

3.5.3.1 Archaeological Resources

Two cultural resource surveys have been conducted at Clear AFS. A 1991 survey (Goebel and Bigelow 1991) identified no prehistoric archaeological sites but located two archaeological sites on Clear AFS property (a railroad camp and a portion of the original Alaska Railroad bed). Both were initially determined to be eligible for inclusion in the NRHP. However, this determination was reversed in 1994 based on an additional survey conducted in 1994 (Northern Land Use Research, Inc. 1995). The determination of non-eligibility was accepted by the SHPO.

Results of the two surveys indicate there are no areas within the boundary of Clear AFS with high potential for prehistoric archaeological resources. Based on geomorphic indicators and the amount of ground disturbance in some areas, the ancient Healy Terrace (shown on **Figure 4**) and the Nenana River margin have moderate potential for prehistoric use and the discovery of significant archaeological resources. These areas cover less than 1.2 square miles of the installation. The Alaska SHPO confirmed this finding in 1995. The Clear AFS ICRMP requires a survey to be done if there will be disturbance in the Healy terrace as part of the construction. In addition, if there are ground-disturbing activities in the Healy terrace, an archaeologist will be observing the activities. Outside of these areas, the remainder of Clear AFS is considered to have a low potential for archaeological resources based on topography and previous disturbance associated with construction. Through the survey development and review, the SHPO agreed that there were no significant archeological resources known to occur on Clear AFS property.

3.6 Socioeconomics

3.6.1 Definition of the Resource

Socioeconomic resources are defined as the basic attributes associated with the human environment, generally including factors associated with population, housing, education, and the economy. Direct impacts to any of these factors may generate secondary effects, resulting in a series of potential socioeconomic ramifications within the affected area.

3.6.2 Requirements

NEPA provides no specific thresholds of significance for socioeconomic impact assessment. Significance varies, depending on the setting of the proposed actions (40 CFR 1508.27[a]), but 40 CFR 1508.8 states that indirect effects may include those that are growth inducing and others related to induced changes in land use patterns, population density, or growth rate.

On February 11, 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. The order requires each Federal agency to make “...achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” Adverse is defined by the Federal Interagency Working Group on Environmental Justice as “...having a deleterious effect on human health or the environment that is significant, unacceptable, or above generally accepted norms.” The order also directs each agency to develop a strategy for implementing environmental justice. The order is intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.

Adverse environmental justice effects would result if minority or low-income populations were disproportionately affected by the project. In order to provide a thorough environmental justice evaluation, particular attention is given to the distribution of race and poverty status in areas proximate to the project area. For purposes of this analysis, minority and low-income populations are defined as follows.

- *Minority Populations*: Persons of Hispanic origin of any race, African Americans, American Indians, Eskimos, Aleuts, Asians, or Pacific Islanders.
- *Low-Income Populations*: Persons living below the poverty level, based on a total annual income of \$22,314 for a family of four persons as reported in the 2010 census.

Because children may suffer disproportionately from environmental health and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was signed in 1997. The intent of EO 13045 was to prioritize the identification and assessment of environmental health and safety risks that may affect children, and to ensure that Federal agencies policies, programs, activities, and standards address environmental risks and safety risks to children.

To estimate potential socioeconomic effects, the baseline conditions for the factors described above were compared qualitatively to the anticipated changes that would result from the proposed project alternatives.

3.6.3 Existing Condition

The following subsections identify and describe the socioeconomic environment of the City of Anderson, the City of Healy, the City of Nenana, Denali Borough, the City of Fairbanks, Fairbanks North Star Borough, and the State of Alaska. The data presented provide an understanding of the socioeconomic factors that have contributed to the development of the area. Socioeconomic areas of discussion include the demographics of the area, regional and local economy (i.e., employment and income), local housing, protection of children, and environmental justice. Data used in preparing this section were collected from the 2010 Census of Population and Housing (U.S. Census Bureau 2010) and the 2005-2009 American Community Survey.

3.6.3.1 Demographics

The installation is located adjacent to the City of Anderson, Denali Borough, Alaska. In 2010, the population of Anderson was 246; Denali Borough was 1,826; and the State of Alaska was 710,231 (U.S. Census Bureau 2010). Between 2000 and 2010 the population of Anderson decreased by 33 percent and the population of Alaska increased by 13.3 percent (**Table 6**) (U.S. Census Bureau 2010).

Table 6. Population Totals for Denali Borough, Anderson, and Alaska.					
Area	1990	2000	2010	% Change	
				1990-2000	2000-2010
Anderson	628	367	246	-42	-33
Healy	487	1,000	1,021	105	2.1
Nenana	393	402	378	2.2	-6.0
Denali Borough	n/a	1,893	1,826	n/a	-3.5
Fairbanks	30,843	30,224	31,535	-2.0	4.3
Fairbanks North Star Borough	77,720	82,840	97,581	6.6	17.8
Alaska	550,043	626,932	710,231	14	13.3
United States	248,709,873	281,421,906	308,745,538	13	9.7
n/a – not available					
Source: U.S. Census Bureau, 2010 Census, Profile of General Demographic Characteristics					

The major racial population group in Anderson is Caucasian, which makes up 87.8 percent of the total population; this is a higher percentage than occurs in either Fairbanks or the State of Alaska (**Table 7**). The City of Anderson has a lower American Indian/Alaska Native population percentage than either the Borough or the State. According to the 2010 Census, the City of Anderson has a higher percentage of individuals with an educational attainment of some college/no degree, and a lower percentage of individuals attaining bachelors and graduate degree in higher education than Denali Borough and Alaska (**Table 8**).

Table 7. Regional Population by Race and Ethnicity (2010).

Area	All Individuals	Caucasian (%)	African-American (%)	American Indian and Alaska Native (%)	Asian or Pacific Islander (%)	Other Race or Two Races (%)	Hispanic or Latino* (%)
Anderson	246	87.8	1.6	2.8	1.2	0.8	3.7
Healy	1,021	91.5	0.4	2.1	0.1	4.0	2.1
Nenana	378	56.1	0.3	37.6	0.3	5.9	0.5
Denali Borough	1,826	89.6	0.5	3.6	1.1	0.8	2.3
Fairbanks	31,535	66.1	9.0	10.0	4.4	2.6	9.0
Fairbanks North Star Borough	97,581	77.0	4.5	7.0	3.1	1.5	5.8
Alaska	710,231	66.7	3.3	14.8	6.4	1.6	5.5
United States	308,745,538	72.4	12.6	0.9	5.0	6.2	16.3

* People of Hispanic or Latino origin may be of any race

Note: The five percentages reported by the U.S. Census Bureau for each geographic region may total more than 100% because individuals may report more than one race.

Source: U.S. Census Bureau, 2010 Census, Profile of General Demographic Characteristics

Table 8. Educational Attainment, Population 25 and older (2010).

Educational Attainment	City of Anderson (%)	City of Healy (%)	City of Nenana (%)	Denali Borough (%)	City of Fairbanks (%)	Fairbanks North Star Borough (%)	Alaska (%)
Less than 9th grade	0.0	0.0	4.7	0.5	3.3	2.2	3.5
9th to 12th grade, no diploma	2.0	4.2	10.0	3.8	7.4	4.9	5.8
High school graduate (incl. equivalency)	37.1	29.6	34.7	29.7	29.6	26.5	27.4
Some college, no degree	32.3	32.2	31.3	30.0	30.8	29.7	28.3
Associate degree	13.3	5.5	6.0	8.5	10.3	9.7	8.0
Bachelor's degree	9.5	19.5	9.9	20.9	11.8	15.8	17.4
Graduate or professional degree	5.8	8.8	2.0	6.6	6.7	11.3	9.6

Source: U.S. Census Bureau, American Community Survey, 5-year estimates

3.6.3.2 Employment and Income

In 2009, average per capita income for Anderson was \$64,315, which was higher than that for Denali Borough, the Fairbanks area, and the State of Alaska (**Table 9**). In 2009, the percentage of individuals below the poverty level in Anderson was lower than that of both Denali Borough and the State (**Table 9**). Residents working in Anderson found the largest employers to be of the professional, scientific, management, and administrative services.

Table 9. Regional Income (2005-2009).					
Area	Number of Individuals	Median Household Income (\$)	Per Capita Income (\$)	Individuals Below Poverty Level (%)	Unemployment Rate* (%)
Anderson	598	62,813	64,315	3.8	n/a
Healy	327	87,232	33,779	4.6	18.9
Nenana	182	57,946	23,859	22.2	16.9
Denali Borough	1,529	76,250	44,689	6.1	6.0
Fairbanks	34,688	51,365	25,757	10.4	7.2
Fairbanks North Star Borough	96,843	65,121	28,373	8.0	6.5
Alaska	683,142	64,635	29,382	9.6	7.3
Source: Values are from U.S. Census Bureau, 2005-2009 American Community Survey. *Values are from May 2011 U.S. Bureau of Labor Statistics and http://www.bestplaces.net/economy/zip-code/alaska/healy/99743 .					

The Power Plant at Clear AFS currently employs 28 to 34 full time DoD civilian workers. Approximately two thirds of the employees live between the towns of Nenana (approximately 20 miles north of Clear AFS) and Healy (approximately 30 miles south of the installation). The remaining employees reside more than 40 miles from the installation.

3.6.3.3 Housing

In 2010, the City of Anderson had the lowest percentage of renter occupied housing compared to Denali Borough and the State of Alaska (**Table 10**). Likewise, owner occupied housing rates in Anderson were greater than that of Denali Borough and of Alaska. The median value of both owner-occupied and renter-occupied housing was highest for the State of Alaska.

Table 10. Regional Housing Characteristics (2010).						
Area	Total Housing Units	Occupied Units	Owner-Occupied (%)	Median Value (\$)*	Renter-Occupied (%)	Median Contract Rent (\$)*
Anderson	145	90	84.4	103,300	15.6	917
Healy	711	434	77.6	210,000	22.4	667
Nenana	215	171	66.7	85,000	33.3	516
Denali Borough	1,771	806	74.9	167,000	25.1	510
Fairbanks	13,056	11,534	35.8	187,900	64.2	934
Fairbanks North Star Borough	41,783	36,441	58.8	198,200	41.2	946
Alaska	306,967	258,058	63.1	221,300	36.9	949
Source: 2010 U.S. Census Bureau, Profile General Demographic Characteristics and Selected Housing Characteristics. *Values are from U.S. Census Bureau, 2005-2009 American Community Survey.						

3.6.3.4 Protection of Children and Environmental Justice

This section identifies the distribution of children and locations where numbers of children may be proportionately high (e.g., schools, childcare center, family housing, etc.) in the vicinity of the installation.

The distant proximity of the installation to residential areas leads to the reasonable conclusion that there are no children in the local area. The percentage of the population under the age of 18 within the City of Anderson is slightly lower than that of Denali Borough and Alaska (**Table 11**).

Table 11. Total Population Compared to Population Under Age 18 (2010).			
Area	Total Population	Population Under 18	
		Number	Percent
Anderson	246	54	22.0
Healy	1,021	256	25.1
Nenana	378	87	23.0
Denali Borough	1,826	411	22.5
Fairbanks	31,535	8,192	26.0
Fairbanks North Star Borough	97,581	25,001	25.6
Alaska	710,231	187,378	26.4
United States	308,745,538	74,181,467	24.0
Source: 2010 U.S. Census Bureau			

According to the 2010 Census, 12.2 percent of Anderson residents are minorities and 10.4 percent of Denali Borough residents are minorities. In 2000, 3.8 percent of individuals in the City of Anderson were below the poverty level, 6.1 percent of Denali Borough residents were below the poverty level, and 9.6 percent of Alaska residents were below the poverty level. The City of Anderson has a poverty level that is below the national poverty level of 13.5 percent.

4. ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section identifies the potential direct, indirect, and cumulative effects of the considered alternatives. This section discusses effects on each of the issue areas presented in Section 3.0, and compares and contrasts potential effects of the considered alternatives.

The level of detail provided for each particular resource area is commensurate with the level of potential impact to that resource from each of the three considered action alternatives as well as the No Action. Where a potential significant impact is identified, mitigation measures are identified that, if implemented, would reduce the level of identified impacts to acceptable, less-than-significant levels. This section also identifies BMPs routinely implemented by the Air Force for construction projects; these BMPs are routine management measures that ensure environmental impacts are minimized as part of any Air Force action. Where appropriate, pertinent regulatory (permitting) requirements associated with the resource are described.

Impacts are identified as either short-term (i.e., during project implementation) or long-term (i.e., during the life of the action). Further, impacts are identified as either significant, less than significant (i.e., common impacts that would not be of the context or intensity to be considered significant under NEPA), or no impact. As used in this EA, the terms “effects” and “impacts” are synonymous. Where appropriate and clearly discernable, each impact is identified as either adverse or beneficial.

4.2 Air Resources

This section discusses impacts to regional air quality associated with each considered alternative. The primary source of air emissions from Clear AFS is fossil-fuel combustion in the three coal-fired boilers at the Power Plant, accounting for approximately 98 percent of the facility’s total emissions (CAFS 2011a). Although each boiler has a rated generating capacity of 100,000 pounds of steam per hour to support the three 7.5 MW steam turbine generators capable of producing 22.5 MW of power, Clear AFS is currently operating under Title V permit conditions that limits each boiler to 85,000 pounds of steam production per hour (Permit No. AQ0318TVP03, Condition 22) and total coal consumption of 135,000 tpy (Permit No. AQ0318TVP03, Condition 12). The Clear AFS Title V air permit defines the conditions and emission levels under which the facility may legally operate. Other sources of air emissions include diesel-fired emergency generators and water pumps along with miscellaneous activities from small furnaces, fuel storage and handling, and fugitive dust.

The Power Plant is fueled by low sulfur sub-bituminous coal that is delivered via rail from the Usibelli Mine, located approximately 40 miles from the plant. During 2010, Clear AFS burned 53,100 tons of coal and 47,300 gallons of diesel (CAFS 2011b), which is approximately 40 percent of its current permitted limit for the Power Plant and 10 percent of its permitted limit for the diesel-fueled equipment. Note that the permit limits on hourly steam production do not correlate to the annual coal consumption limit. That is, the steam production limit is based on state regulatory emission standards that restrict total PM emissions to 0.1 grains per cubic foot of exhaust gas (18 AAC 50.055(b)(2)), whereas the coal consumption limit is an “Owner Requested Limit” to avoid classification as a major source of HAPs by restricting total hydrogen chloride and hydrogen fluoride emissions. The coal combustion limit is the more restrictive of these two permit limits. That is, while the coal combustion limit does not restrict the amount of steam production that can occur during any one-hour period, it does restrict the total steam production that can occur during a 12-month period.

Note that air quality permits are legally binding documents that include enforceable conditions with which the source owner/operator must comply. Some permit conditions are general to all types of emission units and some permit conditions are specific to the source. Overall, the permit conditions establish limits on the types and amounts of air pollution allowed, operating requirements for pollution control devices or pollution prevention activities, and monitoring and record keeping requirements. The primary benefit to the public is that air permits effectively limit the amount of air pollution that is allowed to be emitted from a stationary source. The air permitting programs and review process provide the necessary safeguards to protect air quality within the region and at the nearby Class I area. The issuance of an air-operating permit occurs only after review by a State and/or Federal environmental agency, which may include a review of potential impacts.

4.2.1 Analysis Methods

For this EA, the analysis of impacts to regional air quality was based only on a comparison to existing regional air emissions. Emissions associated with the construction and operational activities for the Heat Plant were calculated using equations, methodology and emission factors from the Air Force, USEPA, and the current air-operating permit. Note that an analysis of air quality impacts using dispersion modeling and other impact models is beyond the scope of this EA. In the event there is a proposed change in operations of the CHPP to increase emissions above the current actual emissions, a separate EA will be prepared which includes dispersion modeling. The regulatory requirements for additional permitting and impact modeling will be discussed in more detail below.

Emission estimates for the various alternatives are based on the project size, construction activities, operating limits in the existing Title V air permit, and other parameters summarized in **Table 12**. Construction emissions would be the close to the same for the Preferred Alternative and Alternative 2 since each would include the same level of clearing for the transmission lines and a new substation along with construction of the new boilers/heat plant(s) and the backup 1 MW generator. Construction activities for Alternative 3 would be less since the clearing for the transmission line would not be needed and the larger power plant construction emissions would not be significantly more than for the backup generator. Operation of the new facilities would generate emissions of criteria pollutants and HAPs from fuel combustion. Approximately 50 acres of forested or scrub/shrub land would be cleared during construction for all but Alternative 3 and the no action alternative.

Operational emissions for the preferred Alternative, Alternative 2 and Alternative 3 are based on the 22.5 MW coal Power Plant shutting down after operational startup of the new heat plant(s). This would be ensured by federally enforceable limits in the Title V permit. Under any of these alternatives, emissions would go down.

4.2.2 Potential Impacts – Preferred Alternative

Construction Emissions

Estimated emissions for the construction phase of the Preferred Alternative (i.e., clearing of the transmission line ROW and constructing the substation and heat plants) are shown in **Table 13**. For the year of construction activity, and assuming that all activity would occur within a 3-month period, there would be a temporary emission increase of 5 tpy for CO and less than 1 tpy for each of the other pollutants. Compared to the existing regional emission levels (see **Table 13**), the construction emissions would temporarily increase regional emissions by 0.20 percent or less as shown.

TABLE 12. SUMMARY OF ACTIVITY ASSOCIATED WITH THE ALTERNATIVES.				
Parameter	Preferred Alternative	Alternative 2	Alternative 3	No Action
Construction Activity	Clearing 150-ft × 2.8-mile	Clearing 150-ft × 2.8-mile	No Grid Tie	-
	Substation 40,000 sq ft	Substation 40,000 sq ft	Construct Prime Power Generators	-
	Construct Oil Fired Heat Plants and backup generator	Construct Centralized Coal Heat Plant and backup generator	Construct Centralized Coal Heat Plant	
Operation of Power Plant	CHPP shut down - No Coal usage	CHPP shut down	CHPP shut down	22.5 MW Coal Power Plant operating at current level (53,100 tpy coal)
Heat and Power source	Decentralized Oil Heat Plants and Power Purchased from GVEA	25 MMBtu Central Heat Plant and Power Purchased from GVEA	25 MMBtu Centralized Heat Plant and 8 MW Diesel Generator power	22.5 MW Coal Power Plant operating at current level (53,100 tpy coal)

TABLE 13. PREFERRED ALTERNATIVE – CONSTRUCTION EMISSIONS (TPY).						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
Preferred Alternative	4.97	0.48	0.73	0.28	0.01	0.08
2008 Regional Emissions	2,651	1,043	1,071	176.4	726.8	303.8
Percent Change in Regional Emissions ^(A)	0.20	0.06	0.07	0.18	0.002	0.02
(A) - Percent Change in Regional Emissions = (Preferred Alternative / Regional Emissions) × 100%, where regional emissions are represented by the 2008 data for Denali Borough, AK. For construction activity, this would represent a change associated only with the year of construction.						

Operational Emissions

Under the Preferred Alternative, new heat plants would be constructed along with a grid tie to the GVEA power line, a new substation and a backup generator. An air construction permit application and revision to the air-operating permit would be required for this new equipment. After the project is complete, the old CHPP would be shut down. Emissions of all pollutants would decrease upon commencement of operations of the new facilities. **Table 14** shows projected emissions from both the CHPP usage and usage of the new heat plant and are compared to the regional emission levels. Compared to the 2010 CHPP emissions, operation of the new heat plant would result in a decrease in emissions for all of the criteria pollutants except PM₁₀ and PM_{2.5} (Regional HAP emission data unavailable).

The local grid provider (GVEA) has indicated that they have sufficient generating capacity to provide power to Clear AFS. The most recent available data from GVEA states that they have a generating capacity of 296 MW, their peak load in 2010 was 208 MW, and all-time system peak load was 223 MW.

Under the Preferred Alternative, Clear AFS would add an additional 5-7 MW load (see **Section 1.2**) to the local grid, well within the available GVEA generating capacity.

In addition, the Clear AFS Power Plant is currently operating at 4-9 MW, which is 1-2 MW more electric power than the facility requires. They cannot reduce power production below this level without risking instability of the generators. The excess power must be shed to an on-site load bank because a tie into the local power grid currently does not exist. This shedding would not be necessary under the Preferred Alternative since Clear AFS would only draw what was needed from the local grid. Eliminating the wasted 1-2 MW of power generation translates into an overall reduction in regional fuel combustion, and therefore an overall reduction in regional air emissions.

TABLE 14. PREFERRED ALTERNATIVE – NEW HEAT PLANT EMISSIONS (TPY).AND POWER PLANT COAL-BURNING EMISSIONS (TPY)						
	CO	NOx	PM ₁₀	PM _{2.5}	SOx	VOC
GVEA emissions increase ^(D)	73.3	73.3	5.5	5.5	15.7	.2
Preferred Alternative	4.1	45.4	5.8	0.65.8	0.09	0.37
No Action ^(A)	132.72	233.59	3.16	1.37	195.1	1.33
Net Increase or Decrease ^(B)	55.32	114.89	(8.14)	(9.93)	179.3	0.76
2008 Regional Emissions	2,651	1,043	1,071	176.4	726.8	303.8
Percent Change in Regional Emissions ^(C)	-2	-11	+0.76	+5.6	-24.7	-0.2
<p>(A) - The No Action Alternative represents the Power Plant emissions based on 2010 coal consumption.</p> <p>(B) - Net Increase (or decrease) = (Preferred Alternative using Heat Plant+ GVEA emissions) – (No Action).</p> <p>(C) - Percent Change in Regional Emissions = (Net Increase / Regional Emissions) × 100%, where regional emissions are represented by the 2008 data for Denali Borough, AK (see Table 3-3).</p> <p>(D) - GVEA emissions increase based on 1993 Healy Clean Coal EIS emissions. TPY for criteria pollutants estimates for average load of 6MW energy adjusted for 12% line loss.</p>						

Conclusion

Implementation of the Preferred Alternative would generate emissions from clearing of the transmission line ROW and construction of the heat plants. This would have a short-term, insignificant impact on air quality.

Implementation of the Preferred Alternative would decrease pollutant emissions for all criteria pollutants except for PM₁₀ and PM_{2.5} after construction of the new facilities, with an overall reduction of over 330 tpy emissions. Because of this, it is expected that air quality levels within Denali Borough would remain in compliance with the NAAQS. Therefore, the Preferred Alternative would be considered to have a beneficial impact to air quality.

4.2.3 Potential Impacts – Alternative 2

Construction Emissions

Estimated emissions for the construction phase of Alternative 2 (i.e., clearing of the transmission line ROW and constructing the substation and heat plant) are shown in **Table 15**. For the year of construction

activity, and assuming that all activity would occur within a 3-month period, there would be a temporary emission increase of 5 tpy or less for all pollutants. Compared to the existing regional emission levels (see **Table 3**), the construction emissions would temporarily increase regional emissions by 0.2 percent or less as shown.

TABLE 15. ALTERNATIVE 2 – CONSTRUCTION EMISSIONS (TPY).						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
Alternative 2	4.97	0.48	0.73	0.28	0.01	0.08
2008 Regional Emissions	2,651	1,043	1,071	176.4	726.8	303.8
Percent Change in Regional Emissions ^(A)	0.20	0.06	0.07	0.18	0.002	0.02
(A) Percent Change in Regional Emissions = (Alternative 2 / Regional Emissions) × 100%, where regional emissions are represented by the 2008 data for Denali Borough, AK. For construction activity, this would be change associated only with the year of construction.						

Operational Emissions

Alternative 2 would involve operation of a new centralized heat plant and purchase of electricity from GVEA. After the project is complete, the old CHPP would be shut down. Emissions of all pollutants would decrease upon commencement of operations of the new facilities. **Table 16** shows projected emissions from the new heat plant and are compared to the current facility emission levels (i.e., No Action Alternative) and current regional emission levels. Emission estimations for the new heat plant are the same as in the Preferred Alternative. Compared to the 2010 CHPP emissions, operation of the new facilities would result in a decrease in emissions for all pollutants.

TABLE 16. ALTERNATIVE 2 – POWER PLANT COAL-BURNING EMISSIONS (TPY) AND NEW COAL FACILITY EMISSIONS.						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
GVEA emissions increase ^(D)	73.3	73.3	5.5	5.5	15.7	.2
Alternative 2 using new Coal Heat Plant	12.3	21.6	7.6	5.7	37.1	.2
No Action ^(A)	132.72	233.59	3.16	1.37	195.10	1.33
2008 Regional Emissions	2,651	1,043	1,071	176.4	726.8	303.8
Net Decrease	47.12	138.69	(9.94)	(9.83)	142.3	0.93
Percent Change in Regional Emissions ^(C)	-1.8	-13.3	0.9	5.5	-19.6	-0.3
(A) No Action represents the Power Plant emissions based on 2010 coal consumption. (B) Net increase = (Alternative 2 using new facilities) – (No Action). (C) Percent Change in Regional Emissions = (Net Decrease / Regional Emissions) × 100%, where regional emissions are represented by the 2008 data for Denali Borough, AK. (D) GVEA emissions increase based on 1993 Healy Clean Coal EIS emissions. TPY for criteria pollutants estimates for average load of 6MW energy adjusted for 12% line loss.						

Conclusion

Implementation of Alternative 2 would generate emissions from clearing of the transmission line ROW and construction of the heat plants. This would have a short-term, insignificant impact on air quality.

Implementation of Alternative 2 would decrease pollutant emissions for all criteria pollutants except for PM₁₀ and PM_{2.5} after construction of the new facilities, with an overall reduction of over 300 tpy emissions. Because of this, it is expected that air quality levels within Denali Borough would remain in compliance with the NAAQS. Therefore, Alternative 2 is considered to have a beneficial impact to air quality.

4.2.4 Potential Impacts – Alternative 3

Construction Emissions

Estimated emissions for the construction phase of Alternative 3 (i.e., constructing the heat plant and new generator facilities) are shown in **Table 17**. For the year of construction activity, and assuming that all activity would occur within a 3-month period, there would be a temporary emission increase of 5 tpy for CO and less than 1 tpy for each of the other pollutants. Compared to the existing regional emission levels (**Table 18**), the construction emissions would temporarily increase regional emissions by 0.20 percent or less as shown.

TABLE 17. ALTERNATIVE 3 – CONSTRUCTION EMISSIONS (TPY).						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
Alternative 3	4.97	0.48	0.73	0.28	0.01	0.08
2008 Regional Emissions	2,651	1,043	1,071	176.4	726.8	303.8
Percent Change in Regional Emissions ^(A)	0.20%	0.06%	0.07%	0.18%	0.002%	0.02%
(A) Percent Change in Regional Emissions = (Alternative 3 / Regional Emissions) × 100%, where regional emissions are represented by the 2008 data for Denali Borough, AK. For construction activity, this would represent a change associated only with the year of construction.						

Operational Emissions

Under Alternative 3, the existing coal-fired boilers in the Power Plant would be shut down and Clear AFS would acquire its needed electric power from new diesel-fired generators and package steam units would be installed for heat. An air construction permit application and revision to the air-operating permit would be required for this new equipment. Under Alternative 3, shown in **Table 18** and compared to the current emission levels (i.e., No Action Alternative), there would be a net increase in current regional emissions for all pollutants.

Conclusion

Alternative 3 would generate emissions from construction of the heat plant and new generator facility. This would have a short-term, insignificant impact on air quality.

Implementation of Alternative 3 would increase emissions for all criteria pollutants except SO_x. Therefore, Alternative 3 would be considered to have a negative impact to air quality.

TABLE 18. ALTERNATIVE 3 – NEW HEAT PLANT AND GENERATOR EMISSIONS.						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
Alternative 3	132.87	547.73	22.95	21.05	104.37	14.27
No Action ^(A)	132.72	233.59	3.16	1.37	195.10	1.33
Net Increase ^(B)	0.15	314.14	19.79	19.68	-90.73	12.94
2008 Regional Emissions	2,651	1,043	1,071	176.4	726.8	303.8
Percent Change in Regional Emissions ^(C)	-5%	-24%	-8%	-20%	-55%	-0.5%
<p>(A) No Action represents the Power Plant emissions based on 2010 coal consumption.</p> <p>(B) Net increase = (Alternative 3) – (No Action).</p> <p>(C) Percent Change in Regional Emissions = (Net Increase / Regional Emissions) × 100%, where regional emissions are represented by the 2008 data for Denali Borough, AK (see Table 3).</p>						

4.2.5 Potential Impacts – No Action Alternative

There would be no new construction under the No Action Alternative, and therefore no construction emissions. There would be no increase in actual operational emissions under the No Action Alternative, and the Power Plant would remain within current permitted levels. As a result, there would be no increase to regional emissions associated with coal combustion within the Power Plant.

Under the No Action Alternative, regional emissions would remain unchanged from current levels. Therefore, there would be no impact to air quality.

4.2.6 Summary of Potential Impacts to Air Quality

The evaluation of insignificant impacts to air quality for each alternative has been based on: (1) operational emission levels remaining at or below permitted levels associated with Clear AFS's current Title V air operating permit with the exception of a slight increase in emissions from construction, and (2) elimination of the 1-2 MW excess power generation associated with current operating level of the Clear AFS Power Plant (see Section 4.2.4). The first point is consistent with the definition of an air-operating permit as a legally binding document that includes enforceable conditions with which the source owner/operator must comply. The second point correlates an overall reduction in power generation to an overall decrease in fuel combustion and associated overall reduction in air emissions. Construction emissions will be very low in comparison to the operational emissions, and will only occur temporarily for a short period during the clearing for the transmission lines.

The evaluation of impacts also did not include HAPs or CO₂ since these were not included in the regional emissions inventories obtained from the National Emissions Inventory Browser (USEPA 2011b). Therefore, no comparison of Clear AFS emissions could be made relative to current regional levels of these pollutants.

There are no ambient air monitors operated by the ADEC located near Clear AFS that could be used to provide a quantitative evaluation of current air quality levels in Denali Borough compared to the NAAQS. The nearest ambient air monitoring sites are located in the City of Fairbanks and are influenced by the industries and population activities in that area. The rural location of Clear AFS and distance from

Fairbanks preclude using the Fairbanks ambient data for a representative evaluation of air quality in Denali Borough. The only nearby Federal or State air monitoring program is located in Denali National Park and Preserve. Here, ambient monitoring of atmospheric visibility is conducted through the Interagency Monitoring of Protected Visual Environments (IMPROVE) program which is an air quality measurement effort managed by Federal, regional, and State organizations specifically for the purpose of monitoring and protecting visibility in Class I areas. Clear AFS is 25 miles from the northern boundary of the park which is a Class I area. Monitoring of atmospheric ozone also occurs here, along with monitoring of toxics, nitrogen deposition, and sulfur deposition.

Denali National Park and Preserve consistently has some of the best visibility and cleanest air measured among all national parks (NPS 2011). This is attributable to the low population density and relatively sparse industrial activity in the region. The main sources of any potential air pollution that could affect the national park is transported by the atmosphere from emission sources in Alaska, including vehicles, industry, power plants, and naturally-occurring wildfires. As mentioned before, Clear AFS is located 25 miles north of the Denali National Park northern boundary. Another nearby power plant is located in the town of Healy, which is adjacent to the northeastern corner of the park. The Healy Power Plant, being significantly closer than Clear AFS would be a larger contributor to air pollution at the park. In addition to the sources present within Alaska, the prevailing west-to-east winds in the mid and upper atmosphere carry pollutants from international sources (i.e., European or Asian) into Alaska (NPS 2011). Note that under the Preferred Alternative and Alternatives 2, Clear AFS would draw its power from the electrical grid. It should not be assumed that the Healy Power Plant would be the sole or primary provider of the extra power supplied to the grid simply because it is the closest power generator to Clear AFS. It is more reasonable to assume that electricity drawn from the grid by all sources is proportionately distributed across all GVEA sources.

A more quantitative evaluation of Clear AFS's impact on air quality within Denali Borough and at Denali National Park would require analysis with atmospheric transport and dispersion models that use site-specific meteorological data as input. This type of data is not currently available for evaluating transport of emissions from Clear AFS. However, a two-year meteorological monitoring program at Clear AFS has recently been initiated for the purpose of collecting PSD-quality meteorological data to support future, potential air permitting efforts.

Under each of the Alternatives, there would be modifications to the facility operation including possible elimination of the current boilers and addition of new fuel-burning equipment. There would also be a decrease in potential emissions compared to the current permitted limits, except for alternative 3. Even though this new equipment would be subject to permitting review, the insignificant impacts described in this EA are based on the reduction in potential emissions that would occur compared to current permitted levels. The new equipment would be subject to the ADEC air permitting and environmental review process. The air permitting programs and review process provide the necessary safeguards to protect air quality within the region and the nearby Class I area.

4.3 Biological Resources

4.3.1 Analysis Methods

Potential impacts from implementation of the action alternatives to biological resources, including vegetation, wildlife, threatened and endangered species, and wetlands were evaluated. Biological resources were evaluated in terms of compliance with Section 7 of the ESA, and related laws and authorities. Emphasis was placed on species with legal, commercial, recreation, ecological, or scientific importance. Biological resources might be affected directly by ground disturbance or indirectly through such changes as increased construction noise. A habitat perspective is used to provide a framework for

analysis of general classes of impacts on biological resources (i.e., removal of critical habitat, noise, human disturbance, etc.).

Impacts on biological resources were further assessed by evaluating the following:

- Potential for loss or alteration of suitable habitat and the proximity of similar habitat,
- The proportion of the resource that would be affected relative to its occurrence in the region,
- The sensitivity of the resource to proposed activities, and
- The duration of ecological impacts.

The assessment of potential impacts to biological resources focused on location of proposed facilities and the existing habitat in these areas. Relevant plans and reports were reviewed, along with past NEPA documents, to provide data on existing biological resources in the project area.

4.3.2 Potential Impacts – Preferred Alternative

Construction Impacts

Vegetation

Construction impacts resulting from implementation of the Preferred Alternative would result in insignificant impacts on vegetation due to the required clearing of a an approximately 2.8 mile by 150 foot wide ROW (totaling 51 acres) for the electrical transmission line to connect the Power Plant to the electrical grid. Trees would be cut by hand or with a mechanical hydro-ax feller buncher, and shrubs would be cut to near ground level with a brush mower. No sensitive habitats would be impacted, and the total undeveloped areas that would be cleared constitute approximately 0.5% of the undeveloped area (7,971 acres) on the installation. The approximately 40,000 square foot substation and heat plant(s) would be sited on previously disturbed land that is currently mowed. With any ground disturbance there is danger of introducing invasive species. To mitigate this possibility, Clear AFS would implement BMPs for minimizing the introduction and proliferation of invasive species, such as washing equipment to remove dirt and debris that might harbor invasive seeds before entering and leaving the jobsite, using weed-free fill, disposing of spoil and vegetation contaminated with invasive species appropriately, and revegetating with local native plant species. Clear AFS has a proactive invasive species control program including weed pulling, pesticide spraying and tracking measures to control the spread of invasive species in the installation.

Wildlife

Construction impacts resulting from implementation of the Preferred Alternative would result in insignificant impacts on wildlife due to the required clearing of an approximately 2.8 mile by 150 foot wide ROW (totaling 51 acres) for the electrical transmission line to connect the Power Plant to the electrical grid. During construction activities, larger, more mobile wildlife species are expected to vacate the project area, whereas individuals of less mobile species (i.e., small mammals,) could potentially suffer loss of life during initial construction activities. The proposed siting of the line collinear with an existing road and distribution line ROW would further minimize these minor impacts (i.e., by eliminating the habitat-fragmenting effects that would occur if it were not collinear).

The installation of raptor nesting diverters on poles would help to avoid instances where nests and birds are destroyed, and poles damaged, by electrocution and fire. Guidelines and BMPs for designing new power poles and lines developed by the Avian Power Line Interaction Committee (APLIC) including Avian Protection Plan (APP) Guidelines and Suggested Practices for Avian Protection on Power Lines would be used for design of the transmission line.

Potential impacts to migratory birds would be avoided by implementing the following BMP: Conducting clearing and ground disturbing activities in potentially suitable nesting habitats prior to May 1 or after July. If this were not possible, then other measures to avoid impacts to breeding migratory birds would be initiated. For example, the work area could be cleared of vegetation prior to May 1. This would render the proposed project area unsuitable for breeding migratory birds prior to their arrival and facilitate work during the breeding season without impacts to birds. In addition, avian-safe standards for design would be implemented and appropriate insulating materials, visibility enhancement devices, anti-perching and anti-nesting devices would be installed at the time of new line construction.

Threatened and Endangered Species

Because no State or Federally listed threatened or endangered species or regional species of concern are known or expected to occur in the project area, no impacts to this resource would be anticipated from construction activities associated with the Preferred Alternative. However, because the density of eagles and their nests is highly variable statewide and by season, nest surveys in the spring prior to commencing construction activities would be conducted. Should an active Bald or Golden Eagle nest be observed in the project area at any time during the project, the Alaska Fish and Wildlife Service would be consulted for additional guidance.

Operational Impacts

Operational impacts resulting from implementation of the Preferred Alternative would result in a long-term continuation of the insignificant impacts described for construction activities. The transmission line ROW would be periodically cleared as needed to maintain accessibility in the event that maintenance is required on the line, as well as to prevent vegetation from reaching the transmission lines. To avoid impacts to migratory birds, the BMP measures identified in the above operational impacts would be implemented. Although the final design for the transmission line has not been completed, it is possible that the maintenance ROW would be narrower than the 150 foot wide ROW required for construction, which would further reduce the potential for effects. As stated, avian-safe standards for design would be implemented and appropriate insulating materials, visibility enhancement devices, anti-perching and anti-nesting devices would be installed at the time of new line construction.

4.3.3 Potential Impacts – Alternative 2

Construction Impacts

Construction impacts to vegetation, wildlife, and threatened and endangered species resulting from implementation of Alternative 2 would be the same as those identified for the Preferred Alternative.

Operational Impacts

Operational impacts to vegetation, wildlife, and threatened and endangered species resulting from implementation of Alternative 2 would be the same as those identified for the Preferred Alternative.

4.3.4 Potential Impacts – Alternative 3

Construction Impacts

Construction impacts to vegetation, wildlife, and threatened and endangered species resulting from implementation of Alternative 3 would be minimal since construction would occur on previously disturbed areas.

Operational Impacts

Operational impacts to vegetation, wildlife, and threatened and endangered species resulting from the implementation of Alternative 3 would be minimal.

4.3.5 Potential Impacts – No Action Alternative

Because no construction activities or change in operations would be expected if the No Action Alternative were selected, no impacts to vegetation, wildlife, or threatened and endangered species would occur.

4.4 Cultural Resources

4.4.1 Analysis Methods

The proposed activities within the project area were evaluated to determine how they might affect cultural resources. Impacts on cultural resources are considered significant if implementation of the proposed project would potentially disturb unique cultural resources or properties on, or eligible for, the NRHP.

4.4.2 Potential Impacts – Preferred Alternative

Construction Impacts

The Preferred Alternative would not have an adverse effect to any known or surveyed sites. However, construction activities have the potential to affect unknown cultural resources that may be present in the proposed disturbance areas. Any cultural resources identified during construction of the transmission line ROW would be avoided by selective pole placement to avoid the area and by limiting vehicular traffic and construction and maintenance activities in the area. If ground-disturbing activities during project construction uncover cultural materials, all work would cease in that area and interested Tribes and the SHPO would be notified immediately.

Operational Impacts

Operation of the Power Plant or the substation, transmission line and heat plant(s) would not impact cultural resources. Periodic inspection and maintenance of the transmission line and substation would be performed and could impact unknown cultural resources that may be present. The same BMPs identified for the original construction to avoid impacts to historic and cultural resource sites would be followed during maintenance. Therefore, no direct or indirect effects to cultural resources are expected from operation and maintenance activities.

4.4.3 Potential Impacts – Alternative 2

Construction Impacts

Construction impacts from Alternative 2 would be the same as those described above for the Preferred Alternative.

Operational Impacts

Operation and maintenance impacts from Alternative 2 would be the same as those described above for the Preferred Alternative.

4.4.4 Potential Impacts – Alternative 3

Construction Impacts

Construction impacts from Alternative 3 would be minimal since all construction would occur in previously disturbed areas.

Operational Impacts

Operation of the Generators and the heat plant(s) would not impact cultural resources. Therefore, no direct or indirect effects to cultural resources are expected from operation and maintenance activities.

4.4.5 Potential Impacts – No Action Alternative

Under the No Action Alternative, the proposed transmission line and substation would not be constructed; therefore, no cultural resources would be affected. Continued operation of the Power Plant under the No Action Alternative would have no effect on cultural resources.

4.5 Socioeconomics

4.5.1 Analysis Methods

Socioeconomic impacts that could be considered direct effects on the environment, such as changes to population and housing, and that are separate from strictly economic impacts, such as a loss of revenue, are addressed in this section.

4.5.2 Potential Impacts – Preferred Alternative

Construction Impacts

Insignificant short-term beneficial effects would be expected from implementation of the Preferred Alternative. A short-term increase in the labor force at Clear AFS would be expected due to workforce needs associated with construction.

Due to the lack of children at Clear AFS, no health and safety impacts to children would be expected from implementation of this alternative. Likewise, because the project would occur entirely within the boundaries of Clear AFS, no disproportionately high and adverse human health or environmental effects on minority or low-income populations would be expected.

Operational Impacts

Operational Impacts would have insignificant long-term adverse impacts from the implementation of this alternative. The current employees would no longer be employed by the Power Plant. The unemployment rate in the Denali Borough area is relatively low (see **Table 10**) and therefore, these individuals may be able to find employment in the area. As DoD civilian employees, the workers would have preferential hiring status for other DoD employment at Clear AFS or other Federal facilities. If they are not able to obtain employment in the Denali Borough area, long-term indirect impacts could result from displacement of the Power Plant employees and their families from the region, which would slightly reduce the population in the area. This loss, however, would be insignificant in the context of the relatively broad geographic area in which the employees live (see **Section 3.6.3.2**).

4.5.3 Potential Impacts – Alternatives 2 and 3

Construction Impacts

These alternatives would have similar short-term impacts as the Preferred Alternative related to construction activities.

Operational Impacts

These alternatives would have similar long-term impacts as the Preferred Alternative related to operational activities.

4.5.4 Potential Impacts – No Action Alternative

Under the No Action Alternative, no changes would occur and there would be no direct short or long-term impacts to socioeconomics.

4.6 Cumulative Effects

As defined by CEQ regulations at 40 CFR Part 1508.7, cumulative impacts are those that “result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, without regard to the agency (Federal or non-Federal) or individual who undertakes such other actions.” Cumulative impact analysis captures the effects that result from an action in combination with the effects of other actions in the action’s region of influence.

In accordance with NEPA, past, present, and reasonably foreseeable future actions with the potential to cumulatively affect the same resources as the proposed actions are discussed below followed by an analysis of cumulative effects. Future actions proposed in the area may require site-specific NEPA analysis prior to implementation.

4.6.1 Past, Present, and Reasonably Foreseeable Actions

Clear AFS is an active military installation that requires new construction, facility improvements, and infrastructure upgrades on an ongoing basis. Additionally, many buildings have been demolished or are scheduled for demolition including five buildings in the Camp Area that were recently demolished.

Short-range projects (i.e., FY 2010-2016) planned or completed at Clear AFS that may cumulatively affect the same resources as the action alternatives include:

- Installation of SSPARS backup power generators,
- Construction of site improvements to main gate,
- Reconstruction and upgrade of recreational facilities,
- Construction of a new Fire Station,
- Construction of a new Civil Engineer complex,
- Reconfiguration of Shuttle Drop-Off at SSPARS Building 800,
- Demolition of former Technical Site radars and associated buildings (12 structures),
- Demolition of the Central Heat and Power Plant
- Renovation of the current Fire Station (Building 251) for Medical Clinic and Ambulance Shelter,
- Renovation of Building 201 for Health and Wellness Center, and
- Demolition of 12 buildings in the Camp Area.

The Clear AFS General Plan (USAF 2012a) has also identified several long-range projects (i.e., FY 2013-2024 and beyond), including:

- Construction of a new Security Forces Facility,
- Construction of a new Base Exchange,
- Construction of an addition to Building 209 for Moral, Welfare, and Recreation store and storage,
- Construction of a canopy and spill containment at vehicle fuel service station,
- Addition and alteration of vehicle operations for large vehicle repair bay, renovation for welding shop,
- Reconfiguration of base supply receiving area and truck route.

- Construction of a secondary installation access and gate, and
- Addition and alteration to the HAZMART pharmacy.

In addition to the actions evaluated in this EA, some of the demolition and construction projects listed above could take place during the same timeframe because of the short construction period in interior Alaska. The fact that all of the planned projects would occur in previously developed portions of the installation minimizes the potential for significant cumulative impacts to the environment. While there is uncertainty in funding and schedules, the potential cumulative impacts of multiple demolition and construction projects occurring during the same timeframe are discussed below for the various resources considered in this analysis. The demolition of the power plant facilities and infrastructure is not included in the General Plan, but it will be a result of the three alternatives discussed.

Air Quality

Past, present, and future actions on Clear AFS have increased air emissions; however, these actions have not and are not expected to violate air quality standards in the region. Clear AFS was considering leasing the CHPP to a private corporation to allow plant operations to be increased to full capacity and excess power to be sold through the GVEA grid. However, due to a lack of interest by outside corporations, this project was cancelled and the decision was made to shut down the CHPP upon completion of the preferred alternative evaluated in this EA. Additional short-term cumulative air quality impacts could occur if other construction were taking place outside of the installation boundaries. Other ongoing or scheduled activities would also generate criteria air pollutants (primarily PM₁₀), but the amounts would not be significant with the addition of pollutants from the action alternatives. For these reasons, there would be no significant cumulative impacts to air quality.

Soils Resources

Soils in the area are disturbed as a result of development and continued use of the installation by the Air Force. Soils would continue to be affected by additional planned development that has the potential to increase cumulative soil erosion and compaction. The action alternatives would cause an incremental increase in the erosion and compaction of the soils in the project area. The alternative's contribution to these cumulative impacts would be minimal because BMPs, including erosion control measures, would limit erosion and minimize compaction. Appropriate implementation of prescribed measures would reduce potential impacts to a less than significant level. The other activities in the area that also have the potential to disturb soils would also implement measures similar to those planned here to reduce impacts on soils. Therefore, the less than significant impacts on soils as a result of the proposed actions are not expected to contribute to significant cumulative impacts in the area of Clear AFS.

Water Resources

No significant cumulative impacts to surface water, groundwater, wetlands or floodplains are anticipated to occur as a result of implementation of the preferred alternative in combination with other projects. Appropriate implementation of prescribed BMPs for all planned projects would reduce any potential impacts to these resources. Activities associated with the preferred alternative could have the potential to affect wetlands in the project area, but the implementation of BMPs remove the potential for impacts. ROW clearing would occur in accordance with Army Corps of Engineer/permit requirements for clearing of vegetation as to not impact the wetlands and transmission line towers would be constructed in non-wetland areas.

Biological Resources

The action alternatives would not have significant impacts on biological resources in the project area primarily because of the previously disturbed and developed nature of the installation, which does not provide suitable habitat for most wildlife species. Other activities occurring in the vicinity would include impact-minimizing measures similar to those planned for this project. Therefore, the less than significant

impacts on biological resources as a result of the proposed actions are not expected to contribute to significant cumulative impacts at Clear AFS. In combination with the other activities occurring in the area, the Proposed Action would not contribute to significant cumulative impacts.

Cultural Resources

Other reasonably foreseeable activities could affect cultural resources through ground disturbing activities. However, these projects would have to comply with relevant cultural resource laws and regulations similar to those in place for the action alternatives and similar BMPs would be implemented to minimize potential effects (e.g., surveys of potential impact areas by a professional archaeologist prior to construction and stop-work orders to reduce impacts on any undiscovered cultural resources). Based on implementation of BMPs, the action alternatives in combination with the other activities occurring in the area are not expected to contribute to significant cumulative impacts on cultural resources.

Socioeconomics

The action alternatives would have insignificant short-term beneficial effects to socioeconomics related to construction of the substation and transmission line. Other reasonably foreseeable activities on the installation would be expected to have similar short-term beneficial effects related to construction employment.

Utilities and Infrastructure

No significant cumulative impacts related to infrastructure and utilities are anticipated as a result of implementation of the action alternatives in combination with other ongoing activities. The receiving landfill for solid waste, the Denali Borough Landfill, has sufficient capacity including provision for growth in its service area. Because this landfill would have adequate capacity to serve these projects and other development in its service area, impacts from these actions and related projects are not cumulatively significant.

Hazardous Materials and Wastes

No cumulative impacts are anticipated from the long or short-term increase in hazardous wastes.

4.7 Relationship Between Short-Term Uses of the Environment and Long-Term Productivity

Section 102 of the CEQ NEPA Regulations and CFR 1501.16 require that an environmental document include a discussion of “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity.” The action alternatives do not involve a trade-off between a “local short-term use” of the environment and the maintenance and enhancement of the environment in the sense contemplated by NEPA. Construction impacts associated with the action would be short term and temporary. Short-term uses of the environment would include direct minor construction related disturbances. Short-term uses of the environment associated with the alternatives include changes to the physical environment and energy and utility use during the construction of facilities associated with all alternatives except for the No Action Alternative. Construction would involve short-term increases in fugitive emissions and construction-generated noise and would increase the use of fossil fuels to power equipment. In addition, expenditures of public funds and the use of labor would be required.

Implementation of the Proposed Action would not sacrifice the long-term productivity of the project area for short-term uses during construction. There are numerous plans, procedures, protocols, regulations, and laws that have been established to protect human health and the environment. Compliance with these regulatory mandates by the DoD and its contractors would reduce both short-term and long-term impacts.

4.8 Irreversible and Irretrievable Commitment of Resources

NEPA (Section 102) and the CEQ NEPA implementing regulations (40 CFR 1502.16), require a discussion of “any irreversible and irretrievable commitments of resources which would be involved in a Proposed Action should it be implemented.” Implementation of the action alternatives would not involve the substantial use of nonrenewable resources in such a way that would result in conditions that would be irreversible though removal or nonuse thereafter. The irreversible and irretrievable commitment of resources would involve the use of materials, energy, and economic resources. Construction activities would require relatively small amounts of ordinary materials such as fuel and construction materials. Long-term commitments of resources would occur from expenditures to complete the construction. Implementation would result in the use of fossil fuels, a nonrenewable form of energy. The material requirements for this project would be relatively minor compared to the overall demand for such materials, and the use of these materials would not have a significant adverse effect on their continued availability. Future generations would not be committed to irreversible consequences or uses.

5. LIST OF PREPARERS

The following individuals were involved with the preparation of this EA.

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APPENDIX A - AGENCY CORRESPONDENCE

US Fish and Wildlife Service November 19, 2012 letter:



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
November 19, 2012



Jim Buchanan
21 CES/CEANN
580 Goodfellow St.
Peterson AFB, CO 80914-2370

RE: Draft Environmental Assessment for Clear
AFS Grid Tie-in and Heat Plant

Dear Mr. Buchanan:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment (EA) for the grid tie-in and new heat plant at Clear Air Force Station (AFS), Alaska. The preferred alternative includes clearing a 2.8-mile by 150-foot wide right-of-way for the construction of new electrical transmission lines from a new transmission substation to an existing transmission line located on the west side of the Park's Highway and operated by Golden Valley Electric Association (GVEA). The purpose of the project is to increase energy efficiency and to save utility costs.

Migratory Birds: The Service commends Clear AFS for their commitment to mitigate for impacts to migratory birds during the nesting season by avoiding clearing activities during both project construction and operational maintenance from May 1 to July 15. However, we also have additional recommendations to further minimize project impacts to migratory birds, including raptors.

The Bald and Golden Eagle Protection Act protects eagles from take, as well as from disturbance to their nests, roosts, and foraging sites. The density of eagles and their nests is highly variable statewide and by season. The Service can offer guidance on past eagle use, but we cannot predict future use, or potential use in proposed project areas where we have little or no data. Ultimately, it is the applicant's responsibility to prevent disturbance to eagles and we recommend conducting nest surveys in the spring prior to commencing construction activities. Should an active Bald or Golden Eagle nest be observed in the project area at any time during the project, we recommend reviewing our eagle permit website at <http://alaska.fws.gov/eaglepermit/index.htm>.

The Service is concerned about electrocution and bird strikes with the new transmission lines and poles. We recommend Best Management Practices (BMPs) be implemented to minimize impacts to migratory birds, including eagles and osprey (section 3.6.3.2. of the EA refers to the potential for osprey in the project area). Transmission lines and poles are inviting places for birds to perch

and nest, creating an electrocution hazard for birds as well as economic and management consequences to users and operators of the utility.

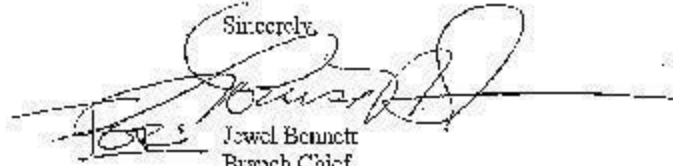
In order to reduce impacts to migratory birds we recommend avian-safe standards be implemented and appropriate insulating materials, visibility enhancement devices, anti-perching and anti-nesting devices be installed at the time of new line construction. For example, the installation of raptor nesting diverters on poles will help to avoid instances where nests and birds are destroyed, and poles damaged, by electrocution and fire. An electrocution and fire incident occurred on a GVEA pole in Fairbanks in 2011, destroying a well-established osprey nest and young. GVEA immediately installed nesting diverters on the power pole and erected a nest platform adjacent to the pole. The new platform was in use by the displaced osprey the next day (see attached photo). Installing nesting diverters during construction may help to prevent these incidences in the future. The Avian Power Line Interaction Committee (APLIC) has developed guidelines and BMPs for designing new power poles and lines, as well as retrofitting existing poles, for avian safety. Several documents, including *Avian Protection Plan (APP) Guidelines* and *Suggested Practices for Avian Protection on Power Lines*, can be found on their website, <http://www.aplic.org/mission.php>. The Service is available to offer technical advice for the implementation of BMPs to reduce impacts to migratory birds.

Species of Concern: The proposed project may be located in an area where priority bird species of conservation concern occur, such as the rusty blackbird, blackpoll warbler, gray-cheeked thrush, and white-winged crossbill (Section 3.6.3.2). Rusty blackbirds also are listed as a priority species for conservation in Alaska's Comprehensive Wildlife Conservation Plan (Alaska Department of Fish and Game 2006), and in the Northwestern Interior Forest All Bird Conservation Plan (Sharbaugh 2007). In order to minimize impacts to priority species, the Service recommends Clear AFS conduct a detailed wetland survey and avoid locating the proposed project in or adjacent to habitat preferred by species of conservation concern, especially rusty blackbirds.

Vegetation: The EA does not mention the potential for adverse impacts associated with the introduction and spread of invasive species (Section 4.5). The Alaska Natural Heritage Program (AKNHP) invasive species mapping website, (<http://aknhp.uaa.alaska.edu/maps/akepic/>) indicates the possible presence of several invasive species in the area, including the highly invasive white sweetclover. The Service recommends Clear AFS implement BMPs for minimizing the introduction and proliferation of invasive species, such as washing equipment to remove dirt and debris that might harbor invasive seeds before entering and leaving the jobsite, using weed-free fill, disposing of spoil and vegetation contaminated with invasive species appropriately, and revegetating with local native plant species. The Service suggests Clear AFS work with the Cooperative Extension Service and the Fairbanks Soil and Water Conservation District to facilitate a more proactive approach in dealing with the spread of invasives.

Thank you for the opportunity to comment on the Draft Environmental Assessment (EA) for the Clear AFS grid tie-in and heat plant. If you have any questions about these comments, please contact Charleen Veach at 907-456-0276 or by email at charleen_veach@afas.gov.

Sincerely,



Jewel Bennett
Branch Chief
Conservation Planning Assistance

cmv/cmiv

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Anti-perching devices on a utility pole and a new nest platform for the osprey displaced by a fire that burned its nest with young a few days earlier.

APPENDIX B – PUBLIC CORRESPONDENCE

AFGE 1836's Clear ECIP Environmental Assessment review comments received via email on May 20, 2013:

AFGE 1836 - Clear CHP_ECIP EA Comments

Line 264;

How does the project provide a redundant source of electricity and heat? The generators for building 800 are classified "Emergency" and limited to a 12 month 450 hours run time for all 3 generators. How is redundant heat being provided for?

Line 264;

Exactly how is a cost savings going to be appreciated? Coal fired cogeneration is the most economical method of providing electricity and heat to a facility and/or Installation. Coal is the most stable priced energy source.

Line 308;

Is it not true that the existing Plant could wheel 7 to 12 Megawatts to other DoD installations in Alaska, if facilitated to do so? Is it also not true that production at rated capacity would improve efficiency and ultimately save on overall energy consumption by the DoD and save the American Taxpayer money? Is it not true that investments of and/or the payback of these savings would constitute a true Energy Conservation Investment Program project, verses the Air Force just relocating their electrical generation requirements up the road to another generator who's likely to generate it through oil generation?

Lines 321 – 323;

Burning oil for heat won't reduce energy consumption, nor reduce dependency on oil, nor save money.

Lines 385 – 386;

Demolition of the Clear AFS Plant could potentially cause adverse environmental impacts.

Line 394;

Why was an alternative to tie to the grid and wheel power to other DoD installations omitted? Shouldn't it get a fair hearing?

Lines 405- 406;

Relocation of generation up the road doesn't increase energy efficiency. Cost savings claims are a pretext at best at this time, as the Air Force has failed to share any of their analysis data with the public.

Lines 1184 – 1214;

There will be little to no net reduction in regional emissions and potentially be a net increase in regional emissions because of the firing of oil for heat at Clear. The portion for electrical generation will transfer to GVEA the regional utility company. GVEA will actually have to produce more energy (emit more emissions) than Clear draws to make up for the drop in Power Factor from 92% to 80% to cover line loss and etc. So, the Air Force can't claim 100% of the existing Clear Plant emissions will be reduced simply because they are not emitting it; the transferred generation emissions are still being emitted on their

AFGE 1836 - Clear CHP_ECIP EA Comments

behalf and the Air Force will be emitting the additional oil fired emissions as well for heating. The math doesn't add up. The only savings will/would be the emissions for generation for the energy dissipated by the load bank and those emissions will dissolve upon completion of the Radar facility upgrade because of the increased electrical load projected by the upgrade. Net regional emissions are more likely to increase, then decrease; as is regional energy consumption; as is cost, both to all American Taxpayers in the form of taxes and Interior residents in higher electric and fuel oil rates.

Lines 1478 to 1487;

Unemployment averages 17.9% in the area (Healy and Nenana); this doesn't equate to relatively low. Anderson has decreased in population 33% in the past decade, down to 246 in 2010; the Borough has decreased 3.5%. A decrease of 2/3rds of the Plant employees (US avg. Family size 3) will equate to another 3.5% decrease in the Borough and potentially an additional 26% decrease in population in Anderson. These figures are not insignificant in nature and aren't slight. There aren't other employment opportunities at Clear for the displaced employees and other Federal employment opportunities continue to dwindle as the Government draws down due to the looming financial crisis; the private sector doesn't offer a much rosier picture either for specialized power plant employees. The plan is poised to place a nominal 30 workers in the unemployment line, disrupting their families and local communities, all while saving no money, energy or emissions. The adverse impacts will be long term; however they'll begin rather immediately and likely touch all American Taxpayers and doubly tap Alaska Interior residents, not to mention disrupt 30 some odd Alaskan families directly.

Line 1517;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1518;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1527;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1528;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1529;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

AFGE 1836 - Clear CHP_ECIP EA Comments

Line 1530;

Will likely add additional electrical requirement to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1531;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1534;

Will likely add additional electrical requirement to the installation; should be weighed in any consideration to decommission the existing Plant.

Line 1535;

Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.

Lines 1592 to 1596;

The same short term benefits could be realized by construction/renovation activities in the existing Plant, however ultimate cost savings, energy usage reductions \$/kW and/or \$/BTU, and less total emission for the electricity and heat provided would be long lasting; add, the negative social economic impacts could be avoided.

Lines 1632 to 1635;

If the transition to oil for heat is undertaken, it is highly unlikely the revision back to coal would ever be possible; therefore, it would likely be an irreversible decision. The requirements would be relatively low to the overall demand for oil, however potentially not so low in the local market; a nominal 600,000 gallons of additional oil demand is likely to be added to the local market for Clear's heating requirements. One adverse consequence will be future generations will be at the mercy of oil pricing as far as the expense to them to heat Clear AFS, verses appreciating the stable price of Alaskan clean coal.

In summary

The Air Force's proposed plan will adversely impact the region immediately, long term and at a more than insignificant level. The project will cost more than the Air Force has stated, if they adhere to sound arctic engineering principles; it won't save money, energy, nor reduce emissions upon project competition; and, it is ill advised until a natural gas line is constructed. There is no true Energy Conservation Investment Program benefit in decommissioning the Clear AFS Central Heat and Power Plant; there is in facilitating the existing Plant wheeling energy to other DoD installations.

Comment Response Matrix for AFGE comments.

ITEM	Line Numbers	COMMENT	ACTION
1	Line 264 (Section 1.1, 1 st para)	How does the project provide a redundant source of electricity and heat? The generators for building 800 are classified “Emergency” and limited to a 12 month 450 hours run time for all 3 generators. How is redundant heat being provided for?	While it is true that the building 800 generators are restricted to 450 hours of use for all three generators (two currently installed and one awaiting installation), this restriction only applies to generator testing and repair run hours. In the event of a power outage, generator usage is unrestricted until the outage is corrected. This applies to the other “emergency” generators that provide backup power at Clear AFS. Redundant heat to the composite area will be a requirement in the design criteria for the ECIP project. At this point, the design details are still being worked out utilizing a multi-system and multi boiler design for redundancy.
2	Line 264 (Section 1.1, 1 st para)	Exactly how is a cost savings going to be appreciated? Coal fired cogeneration is the most economical method of providing electricity and heat to a facility and/or Installation. Coal is the most stable priced energy source.	While coal fired cogeneration is usually the most economical method of providing electricity and heat to a facility and/or Installation, the situation at Clear AFS where the plant is operated at approximately 25-35 percent of its rated capacity results in a comparatively inefficient operation. The Air Force has completed multiple energy analysis studies, all of which have shown that annual operational savings and substantial savings in improvements needed in the power plant.

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
3	Line 308 (Section 1.2, 3rd para)	Is it not true that the existing Plant could wheel 7 to 12 Megawatts to other DoD installations in Alaska, if facilitated to do so? Is it also not true that production at rated capacity would improve efficiency and ultimately save on overall energy consumption by the DoD and save the American Taxpayer money? Is it not true that investments of and/or the payback of these savings would constitute a true Energy Conservation Investment Program project, verses the Air Force just relocating their electrical generation requirements up the road to another generator who's likely to generate it through oil generation?	It is true that the existing Plant could wheel 7 to 12 Megawatts to other DoD installations in Alaska, if facilitated to do so, and that production at rated capacity would improve efficiency and ultimately save on overall energy consumption by the DoD and save the American taxpayer money. The payback of these savings would constitute a true Energy Conservation Investment Program project. However, the Air Force recently put out a request for quote to seek interest by outside companies in leasing the CHPP and doing just what is proposed here and the Air Force received no quotes from interested parties. Because there is no interest from industry to lease the CHPP this option was eliminated from consideration. While it is true that the power requirements at Clear AFS will not just go away and the power will need to be produced somewhere else, it is not certain nor likely that the power requirements will be met through oil generation versus coal generation. The anticipated restart of the Healy Clean Coal power generation facility with 50 MW of power generation capacity will likely be the first choice of Golden Valley Electric Association to provide for any new electric requirements.

(cont)

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
4	Lines 321 – 323 (Section 1.2, 6th para)	Burning oil for heat won't reduce energy consumption, nor reduce dependency on oil, nor save money.	It is true that burning oil for heat will not reduce energy consumption, nor reduce dependency on oil. However, multiple energy analysis studies have shown that the overall cost of providing heat and electricity to Clear AFS will go down after the ECIP project is complete.
5	Lines 385 – 386 (Section 2., 1 st para)	Demolition of the Clear AFS Plant could potentially cause adverse environmental impacts.	The demolition of the Clear AFS CHPP will be evaluated in a separate EA. The Air Force is committed to complying with all environmental requirements and will work to ensure that potential adverse environmental impacts are avoided or mitigated.
6	Line 394 (Section 2.2)	Why was an alternative to tie to the grid and wheel power to other DoD installations omitted? Shouldn't it get a fair hearing?	The Air Force recently put out a request for quote to seek interest by outside companies in leasing the CHPP and providing power to the Alaska community. However, the Air Force received no quotes from interested parties. Because there is no interest from industry to lease the CHPP this option was eliminated from consideration. The alternative to connect to the grid and wheel power to the community or to other DoD installations was not considered reasonable because there was no industry interest in the option.

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
7	Lines 405-406 (Section 2.2.1, 1 st para)	Relocation of generation up the road doesn't increase energy efficiency. Cost savings claims are a pretext at best at this time, as the Air Force has failed to share any of their analysis data with the public.	We non-concur with the statement that this project does not increase energy efficiency. As stated in the EA, the current operation of the power plant is at a very low capacity, an even at the low capacity Clear AFS needs to use a load bank to shed power at times. Conversely, the GVEA power plants are operated at or near peak capacity and much more efficient. Therefore, to say that, "Relocation of generation up the road doesn't increase energy efficiency." is incorrect in this case. The Air Force has provided summaries of the results of the economic analysis that was done prior to the start of this project with the public as well as a redacted copy of the full economic analysis report to the AFGE 1836 Union.

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
8	Lines 1184 – 1214 (Section 4.2.2, Operational Emissions)	There will be little to no net reduction in regional emissions and potentially be a net increase in regional emissions because of the firing of oil for heat at Clear. The portion for electrical generation will transfer to GVEA the regional utility company. GVEA will actually have to produce more energy (emit more emissions) than Clear draws to make up for the drop in Power Factor from 92% to 80% to cover line loss and etc. So, the Air Force can't claim 100% of the existing Clear Plant emissions will be reduced simply because they are not emitting it; the transferred generation emissions are still being emitted on their behalf and the Air Force will be emitting the additional oil fired emissions as well for heating. The math doesn't add up. The only savings will/would be the emissions for generation for the energy dissipated by the load bank and those emissions will dissolve upon completion of the Radar facility upgrade because of the increased electrical load projected by the upgrade. Net regional emissions are more likely to increase, then decrease; as is regional energy consumption; as is cost, both to all American Taxpayers in the form of taxes and Interior residents in higher electric and fuel oil rates.	We agree that the requirement for electrical generation will transfer to GVEA, the regional utility company, and that GVEA will have to produce more energy (and emit more emissions). However, in comparing the current regional emissions with the projected regional emissions while factoring in the increase in GVEA emissions and the decrease in Clear AFS emissions we see that overall emissions will go down for all criteria pollutants except PM ₁₀ and PM _{2.5} . In order to better compare the current regional emissions to the projected regional emissions, we have modified Table 14 and 15 in the EA to show the projected emissions increase from GVEA with 12% line loss and compare the combined emissions to the regional emissions.

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
9	Lines 1478 to 1487 (Section 4.5.2, Operational Impacts)	Unemployment averages 17.9% in the area (Healy and Nenana); this doesn't equate to relatively low. Anderson has decreased in population 33% in the past decade, down to 246 in 2010; the Borough has decreased 3.5%. A decrease of 2/3rds of the Plant employees (US avg. Family size 3) will equate to another 3.5% decrease in the Borough and potentially an additional 26% decrease in population in Anderson. These figures are not insignificant in nature and aren't slight. There aren't other employment opportunities at Clear for the displaced employees and other Federal employment opportunities continue to dwindle as the Government draws down due to the looming financial crisis; the private sector doesn't offer a much rosier picture either for specialized power plant employees. The plan is poised to place a nominal 30 workers in the unemployment line, disrupting their families and local communities, all while saving no money, energy or emissions. The adverse impacts will be long term; however they'll begin rather immediately and likely touch all American Taxpayers and doubly tap Alaska Interior residents, not to mention disrupt 30 some odd Alaskan families directly.	Unemployment Rates are listed in Table 9. Unemployment for the towns of Healy and Nenana are 18.9% and 16.9% respectively, but as indicated in the text the unemployment rate for Denali Borough is 6% and is relatively low to Alaska, 7.3% Text has been updated to better define the area. However, the overall conclusion remains the same, <i>"This loss, however, would be insignificant in the context of the relatively broad geographic area in which the employees live."</i> While it is unfortunate whenever someone loses their job, it remains the duty of the Air Force to make difficult economic decisions to save all the taxpayers money whenever possible. The Air Force recognizes that there will be short term impacts to the Anderson, AK community in particular and the interior Alaska community in general, however, it remains true that these changes are insignificant in the broader context of the Alaskan community. In addition, the statement that there will be no savings in money, energy or emissions is incorrect. The Air Force will realize savings in all three areas.

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
10	Line 1517 (Section 4.6.1, Construction of a new Fire Station	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant	The cumulative impact of other proposed or planned projects were addressed in the Cumulative Impacts section of the EA. See section 4.6., Air Quality. The cumulative impacts were considered insignificant in conjunction with all the other foreseeable actions to include demolition projects
11	Line 1518 (Section 4.6.1, Construction of a new Civil Engineer complex	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10
12	Line 1527 (Section 4.6.1, Construction of a new Security Forces Facility	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
13	Line 1528 (Section 4.6.1, Construction of a new Base Exchange	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10
14	Line 1529 (Section 4.6.1, Construction of an addition to Building 209	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10
15	Line 1530 (Section 4.6.1, Construction of a canopy and spill containment	Will likely add additional electrical requirement to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
16	Line 1531 (Section 4.6.1, Addition and alteration to vehicle bay and welding shop	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10
17	Line 1534 (Section 4.6.1, Construction of secondary access and gate	Will likely add additional electrical requirement to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10
18	Line 1535 (Section 4.6.1, Addition and alteration to HAZMART	Will likely add additional electrical and heat requirements to the installation; should be weighed in any consideration to decommission the existing Plant.	See response to Comment 10

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
19	Lines 1592 to 1596 (Section 4.6.1, Socioeconomics)	The same short term benefits could be realized by construction/renovation activities in the existing Plant, however ultimate cost savings, energy usage reductions \$/kW and/or \$/BTU, and less total emission for the electricity and heat provided would be long lasting; add, the negative social economic impacts could be avoided.	We non-concur with the statement that construction or renovation of the existing plant will result in cost savings or emission reductions.
20	Lines 1632 to 1635	If the transition to oil for heat is undertaken, it is highly unlikely the revision back to coal would ever be possible; therefore, it would likely be an irreversible decision. The requirements would be relatively low to the overall demand for oil, however potentially not so low in the local market; a nominal 600,000 gallons of additional oil demand is likely to be added to the local market for Clear's heating requirements. One adverse consequence will be future generations will be at the mercy of oil pricing as far as the expense to them to heat Clear AFS, verses appreciating the stable price of Alaskan clean coal.	Clear AFS will procure fuel sources through the Defense Logistics Agency (DLA) so there will be very minimal impact on availability of fuel in the local market.

Comment Response Matrix for AFGE comments (cont).

ITEM	Line Numbers	COMMENT	ACTION
21	In summary	The Air Force's proposed plan will adversely impact the region immediately, long term and at a more than insignificant level. The project will cost more than the Air Force has stated, if they adhere to sound arctic engineering principles; it won't save money, energy, nor reduce emissions upon project competition; and, it is ill advised until a natural gas line is constructed. There is no true Energy Conservation Investment Program benefit in decommissioning the Clear AFS Central Heat and Power Plant; there is in facilitating the existing Plant wheeling energy to other DoD installations.	Significant analysis was done on the ability to wheel power to other DoD installations, and it was deemed to be economically unviable due to the age of the plant and environmental regulations.